The Langhan's Cellule Aberrated Is The Specific Cellule of Cancer. The Matrix Embryonic Cellule of The Primal Syncytium, The Langhan's Cellule; It's Great Importance Throughout Life; Especially in The Early Days of Ovum Life. The Cohenheim Theory. The Cellulettes. Syncytioma. The Pre-Cancerous Carcinoids. Teratomata. An Illustrated Review of Some Primal Embryology, 2-8th Week, Including the Normal and Abnormal Cancer Cellule.

By

FRANK A. STAHL, M. D.

Rush, 1887

Chicago, Illinois

With Compliments of Author

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66 Plate Illustrations

59 Personal and Original

With Discussions

No doubt in the last resort the discovery of the cause is the only certain and absolute means of cure.

Le Roy.

Wherever there is cancer, there is normal Langhan's cellule aberrated, as causative specific cellule of cancer.

Raison d'être.

This is a reply to a book review opinion written, 1933, by a continentalist well known as an élite among masters of cancer research and thought of today.

I am grateful to him for his kind thoughts, even though negative in effect. It is just such shock liaisons that inspire to greater effort, where in this case pleasant, open, frank discussion may lead to better clarity and understanding of this difficult and seemingly unsolved problem; rather than in the mere pleasure of display of brilliant pyrotechnical polyglot forensics.

I am afraid that the junior assistant has not reflected the radiance due his master's more exalted privilege. The casting seems rather hasty, not of the penetrable appreciative, for though at first glance and a hasty scanning of my Origin of Cancer, this work may seem to him to fall within the scope of his conception of the Cohenheim Theory, yet intrinsically, histologically and pathologically, there are many of the

Contents of Previous Researches

The present publication is the eighth of a series of eight researches concerning the histology and physiology of the early ovum; 2-8th week.

They are in order of appearance as follows:

First—The Syncytium; (contents).

1. The syncytium wholly foetal in origin; (forensic).
2. No characteristic decidua in extrauterine pregnancy; (forensic).
3. The amoeboid-digestion of ovum environment function of the syncytium furnishing sole source of nutrition to primal ovum, except that of the minute gestation cyst and the vitellus pabulum.
4. Origin of first blood corpuscle and plasm in chorion.
5. An origin of cancer from uncontrolled proliferation of embryonic cells — primal and included.
6. Demonstrating Cohenheim's theory for the origin of tumors.
7. The Syncytiomata; benignant and malignant, etc.

Published in Amer. Jour. Obstet., 1902.

Second—The Crescent Erythrocyte; Chorio-decidual attachment; contrast in decidual cell and roving amoeboid syncytial nucleus-cells.

The difference between embryonal primal nucleus-cell and the regular cell as an epithelium cell or an erythroblast blood cell; etc.

Published in Amer. Jour. Obstet., 1906.

Third—The Crescent Erythrocytes in normal and abnormal blood conditions. Explanation for deformity of red blood cells in the anaemias.

Published, personally, January, 1930.

Fourth—Concerning Origin and Development of the Chorion, Amnion and Yolk Sac. The great importance of the Corona Radiata Cells. The Zona Pellucida Ovum Theory vs. the Zona Pellucidaless Ovum, the latter seemingly to enjoy popular embryologic opinion. Edgar Allen's multiple recoveries, 1928, of unfertilized ovules in human tubes — iconoclasting Zona Pollucidaless Ovum Theory, etc.

Published, personally, October, 1930.

Fifth—An extended amplification and résumé research concerning Origin of Blood; First Blood Corpuscle, First Blood Plasm, First Blood Space and First Blood Vessel. Blood corpuscle differentiation from the primal uncolored multinucleolated blood corpuscle to the non-nucleolated red blood corpuscle, the erythrocyte, of maturity: i.e., blood corpuscle maturity, circa 8th week; the blood plastid of Minot. First blood spaces and blood vessels; The Three Blood Circulations; (1) the primal uncolored white blood circulation; (2) the first red blood circulation of the transient red erythroblast; finally (3) the permanent red blood circulation of the erythrocyte, etc. The uncolored multinucleolated nucleus-blood-corpuscle of the primal white blood circulation, is the primary blood cell in the blood; not the erythroblast.

Published, personally, March, 1931.

Sixth—Origin of cancer. The specific cancer cell of carcinoma, contrasted with the normal matrix embryonal cellule of primal ovum days, to 8th week; from which the cancer cell is directly descended. Cancer not epithelial. Sarcoma not connective tissue.

Published, personally, January, 1932.

Seventh—Origin—Cancer and Sarcoma one; identical in cytology. Finding the pure cancer cytology, only, in a reported case of Undifferentiated Round Cell Sarcoma. Revision of many cases of sarcoma yield pure carcinoma on restudy. Does "Cure of Cancer," 10-18 years, post operation with no recurrences, then fatal recurrences, suggest a dormant abeyant chronic form of cancer—A Benign Form of Cancer? Various (30) cases in point of discussion. The causal diminutive cancer cellulettes, dormant or active, must be neutralized or destroyed for ultimate cure. A further amplification of the specific cancer cellule and its conduct. Cell Division.

Published, personally, December, 1932.

Eighth—The Chorionic Syncytial Cellule, the Langhan's Cellule, it's great importance throughout life, especially in early days of ovum life. The Matrix Embryonic Cellule of the Primal Syncytium of the Ovum, the Langhan's Cellule, becomes the cellular cause of cancer and is the cellule from which the specific cancer cellule is descended. The Cohenheim Theory. The Cellulettes. Syncytioma. The Pre-cancerous Carcinoids. Teratomata. An illustrated review of some Primal Embryology, 2-8th week, including the Normal and Abnormal Cancer Cellule.

Published, personally, July, 1934.

weightiest of differences between the two. Cohenheim, though his work shows masterful technical knowledge and highest of degree of philosophic thought, still his conclusion, his theory as to such cause of cancer, as he himself admits, was based wholly on speculation and theory only.

Mijnheer Professor, though at times the Cohenheim theory is scanned with some rising of the eyebrows, perhaps you will agree with me that since Cohenheim and his wonderful predecessors and associates; what progress has been made in the search for the cause of cancer. Artificial cancer and its means of production, irritation, is not new; some phases of the means of irritation may be new but the fundamental cause, the irritation, has long before been mentioned by Virchow, Cohenheim, and his predecessors. Its broader experimental application is newer. Tomes and tomes of cold, cold lead have been piled up almost mountain high, by speculation and theory, even of the most high. And its conclusions? "Today there is no specific cancer cellule," is the cry of cancer opinion; Not intimidated by so great a galaxy of person and print, today, I affirm as I did in 1902, that the Langhan's cellule, injured or diseased by trauma or other insult, is the specific cellule of cancer; staring out of every case of cancer of yesterday, today and of tomorrow. And this is easy to prove; and by histologic specimen only, rather than by mere rhetorical speculation.

Direct descent of the cancer cellule from the primal normal matrix embryonic cellule of the syncytium, the Langhan's cellule, was, is shown by presentation of the normal histologic cytologic divisions of its ancestor cellules, the primal embryonic cellule, the Langhan's cellule. See Figs. 1-5-6-7-etc., from early ova 2-6th week. Even origin of the spindle cellule form is shown beautifully in Fig. 6 (3), 3-4th week.

I have shown that proliferation (division and multiplication) is the same in both the normal and the abnormal or cancer Langhan's cellule; and where there is cancer degeneration they grow side by side. There, in proliferation, they separate, not in form for they continue in semblance but differ in function; the normal Langhan's cellule evolution, proliferation and differentiation, continue on to further normal differential ultimates, such as epithelium, connective tissue, nerve, muscle, bone, etc., cells via embryo differentiation; the Langhan's cellules being brought to the embryo through the white blood circulation. The abnormal cancer Langhan's cellule ceases evolution in proliferation, cut off from further normal differentiation and continues only as a malignant proliferating amoeboiding unit, destroying self and host as such.

My studies show that amitosis or direct cell division is primary, far more numerous and proliferating, than the later mitosis, karyokinesis or indirect cell division.

Nowhere does he (C) show by microscopical or other illustration, any normal or pathologic cytology, or comparisons between the two; no special cell or cellule, picturing the specific cell or cellule or the locus of origin of such cell or cellule, extra-embryo or embryo, of his theory and showing capability of that cell or cellule to change from the normal physiologic function to the abnormal cellule function of the specific cancer cellule, merely stating in a way general, not specific, that he thought cancer descended from an embryonal epithelial cell.

On the other hand, my work, starting with the beginnings of life, the ovule and the ovum, its facts and findings, show very different conclusions from those of accepted opinion, which latter are based on speculation only, as a rule. My work and conclusions are drawn wholly from the normal, from microscopical specimen of syncytia of human normal ova, 2-8th week of growth, and continues throughout the syncytia of the chorion until maturity. I find the Langhan's cellules are the same in structure and appearance throughout pregnancy and into post-natal life. For the abnormal, the cancer cellulette, the aberrated Langhan's cellule, my studies are from various specimen of cancer; syncytioma, skin, liver, brain and other forms of cancer; and I find notwithstanding contrary text book and special article opinion of today, that there is no specific cancer cellule: I find today as in 1902 that there is a specific cancer cellule and that it is the normal Langhan's cellule aberrated or diseased, hence in function; and that in appearance the normal Langhan's cellule and the abnormal Langhan's cellule, the cancer cellule, are strikingly similar in physical appearance throughout life, and that the cancer of pre-Homeric time, of today, and tomorrow will always present the same picture of the specific cancer cellule, the Langhan's cellule aberrated or diseased.

I find the adeno-carcinoma, the osteo-carcinoma, the melano-carcinoma and all other hyphenated carcinomata are carcinomata where the cancer cellulettes and cellules have invaded those tissues and there amoeboided the mater tissues, supplanting them with pure cancer tissue. Hence there is apparently a double cytology, the adeno-osteo-melano-etc. cytology and the invading cancer cytology; but the cancer cytology is ever predominant and assertive at the expense of the mater somatic cells and tissues. The adeno-osteo-melano etc., tissues are merely incidental to the now usurptive predominant invading cancer cytology.

My slides are all personal, interpretation all personal, no assistance whatever; illustrations of photomicrographs are so large and clear that any technician and scholar can follow and judge for himself; thus inviting criticism. Discovery and fixation of the normal primal matrix embryonic cellule was, is in the chorionic syncytial cellule, the Langhan's cellule; cancer cellule was, is shown descendant of this primal matrix syncytial cellule; cancer is never, pre- or post-natal, embryo cellule in origin, always extra-embryo-embryonic-in the chorion; the normal embryonic cellule and the abnormal cancer cellule are shown side by side; both cellules are daughters of the primal matrix embryonic cellule, the Langhan's cellule; also is shown the origin and malignant influence of the cancer cellulettes as cause of metastases and recurrences in cancer; these cancer cellulettes are the cause of early and long delayed recurrent cancer after operation.

Today the specific cancer cellule, seen in all cases and in all forms of cancer, pre-natal or post-natal, the specific cancer cellule is discovered and fixed; today, normal cellule and cancer cellule can be traced back and forth without difficulty.

Just here a question. Has ever histology found an atypical epithelial cellule, not exceptionally so but commonly and numerically so, like the cancer cellule among the offspring of an epithelial cell, that assertion is so positive that the cancer cell is atypical epithelium, and so regularly prolific as in the occurrence of cancer? Where is there a picture of such epithelial cell with such a progeny? Further, in some pathologies the ovum is spoken of as wholly epithelial. Where come human ova justifying such a statement? In my studies of the early ova 2-3-4th week, I find the characteristically epithelial cell in the organs of the embryo-body, fixed as mature epithelial cells, not wandering cells as Langhan's cellules do, see Fig. 37., the metanephros; aside from skin and other tissues. But where is there free unattached epithelium in such quantity, extra-embryo, as to justify a nodule even of free pure epithelium. Extra-embryonically there is absence of pure epithelium. For the Langhan's cellules of the chorion and villi are not epithelial. Hence upon what progeny as offspring of the epithelium, is such positive assertion justified? Transmutation, dedifferentiation, must be ruled out; theoretically it may be assumed, but where can it be shown as practically occuring?

Is not the Langhan's cellule Fig. 1 a cellule unto itself, sui generis, separate and distinct and as descendant of the corona radiata cellules

of the ovule; epithelium being but one of its future evolutionary ultimates.

I would be happy to have any one show error in conclusion and finding, as expressed herein; but I would request only that such proof be expressed in and with histologic cytology, rather than in mere words of theory, hypotheses and postulates. It is not hard to confirm this research. Only a matter of obtaining a few human ova from 2-3rd week, 3-4th week, 5-6th week, and 7-8th week and read their histologies, avoiding as far as possible the speculative.

Here you will be able to read the commencements of life, the ovule-ovum, the activities of the primal chorion, the syncytium, its Langhan's cellules; the origin of the first or white blood circulation of the ovum, one little known and very little written about, showing the first blood corpuscle to be of the Langhan's cellule type, multinucleolated, accounting for the white blood corpuscle rapid multiplication, continuing so until about the 5-6th week of ovum growth, when the white blood circulation makes way to the first red blood circulation of the hematinized mono-nucleated erythroblast. Leukocytes until this time seem absent. The student will find Origin of Blood also in the chorion, its Langhan's cellules emptying into, wandering into primal blood spaces and vessels to originate Blood and cell and plasm, and circulation, in the ovum and embryo. He will find that the erythroblast is not the first blood corpuscle in origin of blood circulation, a statement so emphatically repeated in all text books. Reading how true it is, as was stated by His some 75 years ago that Blood Origin is extra-embryo, without the body of the embryo and before the heart commences to pulsate.

With so early ova all this proof lies openly before the eyes in the chorion, area vasculosa, blood islands, and the last to be mentioned from without inwards, the yolk sac and the embryo. Lifes' primal activities especially in early ovum time depend on without inwards activities; the chorion with its syncytium supplying pabula to all ovum tissues as well as to the embryo trace and further. With the ovum before him the student will see how primary yet all efficient the chorion is, all other tissues being secondary in development and importance. Langhan's cellules and primal Blood Cells are direct descendants of the corona radiata cellules of the ovule through the syncytium of the ovum.

But he must not be afraid to look even without or beyond text book opinion, for such opinion today is the same in assertion as it was of 75-100 years ago. What progress has been made in histologic research concerning these two basic problems, Origin of Blood and Origin of Cancer, in all these years and with all of our superior means and conveniences in specimen, preparation, reading and interpretation. Theories. Would it be fair to ask: Why?

These words are written in the spirit of encouragement to the scholar groping his way through the wildernesses of cold type theories, hypotheses, etc.; for so long as he has the will, the way will soon be cleared of obnoxious undergrowth and overgrowth of disputation; where if, with today's enlarged clear distinct photomicrographs, each would read for himself—while now all is mystery and nebulae.

Now Mr. Reviewer, has all this been done, accomplished before, and demonstrated by normal and abnormal cancer cellules and by illustrations and in manner shown that any student can follow and confirm for himself! And if so, if you please, when and where.
Voilá la revue:

"The Embryonal Theory with regard to the origin of the tumor imports that they originate in the embryonal cell. This is an ancient and for the most part, discarded opinion over which Stahl has a lance to break. The quality of this lance is rather moderate (medium) although we shall not expect from the writer that he will agree with this." Quelle naïveté!

Our friend the translator, offers, so I am informed, his translation of your criticism as mildly sensitive as possible; either to mollify my sentiments or to flatter yours, either way is suitable to me or the reader, so long as it stimulates to worthy findings and advances.

(Dr. Stahl)

Explanation

It is not the design or desire of this effort to enter into an extended polemic or defense of the theory, that the "Embryonic matrix cellule," the Langhan's cellule, is the means or cause of cancer. To me that theory seems quite axiomatic for it holds so much truth that I feel safe in affirming that time and time alone, would have sufficed in proving it; however denied and questioned as it is from time to time. Even if the change in cellule intrinsics were to be discovered, the cellule itself would still roll on and be efficient as the specific cancer cellule.

The great aim in cancer research is: find the guilty cellule; then how destroy it! Then aim and method to cure will be more accurate!

At the time of entering upon this series of early embryonic researches, commencing in 1902; the first time it was mentioned by me that Origin of Blood and Origin of Cancer is in the chorion in the primal embryonic cellule of the primal syncytium of the chorion. Cohenheim's theory was mentioned in the manner of a general thought covering this subject, rather than from the fact that I was fully acquainted with the masterful detail and accuracy he pictured in his extended work, concerning his theoretical origin of cancer. Time and means at that time circa 1900, did not permit the wide literature review usually entered upon in undertaking so important early embryonic research.

So went ahead on general lines with information that was usual in the young cub doctor of the time, where stress of practice, college work and economic necessity did not permit the time and leisure for a wider review. That moment did not arrive until 1928, and then I found that my conclusions and findings of primal embryonic growth, conclusions of facts and findings from my own specimen, and without other assistance, did not coincide with accepted orthodox opinions. However humble the thought may seem, and even after this wide literature review, 1933, I still cling to my original findings and notes of circa 1900, that Origin of Blood and Origin of Cancer is in the chorion; two subjects intimately associated both in histology and pathology.

So far as can be learned with means at hand, these early authors, as Lobstein, Hanel, Durante and Cohenheim did not discover or fix the particular cell or cellule or any one embryonic or embryonal cell as the cell from which the cancer was, is in origin or its locus of origin; Cohenheim simply mentions embryonal epithelial cell. That was left apparently to the future.

PREPARATION

In following this discussion as to the merits or demerits of the embryonic or Langhan's Cell Theory for causation of cancer, a few lines of differentiation in definition and thought have been drawn to facilitate clarity, and unity in understanding, the better to follow the merits or demerits of the various phases of the theory as they unfold themselves.

Primarily the reader will assist himself very materially if he will familiarize himself with the illustration of Peter's ovum, here Fig. 13. There he will note the small embryo-amnio-yolk sac area as compared

to the far greater area of ovum growth as a whole. (Earlier embryo like the Teacher-Bryce ovum, and others are some smaller and differentiation of cellules and parts are not so favorable). Here are two separate and distinct centers of growth activities, the embryo and the extra-embryo or chorionic, interdependent but not the same, for each is wholly different and separate in cell, structure, function and future differential ultimates. Hence have arisen two terms, embryonal and embryonic; embryonal referring to the activities of the embryo proper and embryonic referring to cell activity and conduct of the extra-embryo, the chorion. These terms are not synonymous, though they are used with such freedom that the reader is led to think they mean the same.

Embryonal has reference to the embryo proper and to the early time of embryo growth. Embryo cells and tissues are all mature or approximately so, never immature cells or tissues, as a rule; see Figs. 28-37, at 3-4th week. Cancer in origin is embryonic extra-embryo, chorionic, but never embryo in cell or tissue; it might be in time; cancer is always immature.

Embryonic should be limited in meaning to cell activities and growths outside the embryo, proper, the chorionic; the extra-embryo activity in cells and structures. As example, embryonic growth of the chorion, villi, syncytium, area vasculosa, blood islands and other purely shell tissues all wholly extra-embryo. However opinion may regard my assertion that Origin of Blood and Origin of Cancer, 1902, is in the syncytial cellules, the Langhan's cellule, of the primal chorion; it is universally admitted that Origin of Blood and the blood circulation is extra-embryo in origin. Comparative embryology merely having not as yet, fixed, the locus, the from, and where and how in cytology, even to today, 1934, though admitting they do not know where the original nuclei (blood cells) of the blood islands, Pander's, have origin (Histologies). Hence embryonal cancer is incorrect, as descriptive term, as embryo cells do not give origin to cancer, either in pre- or post-natal life.

Embryonic is more correct, it refers to the extra-embryo; cancer is extra-embryo, Langhan's cellule. Both cellules, the extra-embryo and the embryo are in origin, entirely different in structure and conduct, in fact embryonic chorionic function is primary for it furnishes nutrition and growth material to embryo structures and function; not the other way around.

Embryonic cellules are especially singular, in type, as Langhan's cellules, all immature differentiable into further tissual ultimates. Embryonal cells are many, in form, all mature, not further differentiable; as epithelial connective tissue, bone, nerve and other cells.

Embryonic has reference also to the continuation and the descendants of the extra-embryo syncytial cellules, throughout pregnancy, pre-natal life. The embryonic cellules, the syncytial cellules, are also continued on throughout post-natal life, they continuously having entered the fetal body from the syncytium before delivery. It is stated, though erroneously so, that the syncytium and cellules cease to exist, are destroyed, as pregnancy advances (Text book Histology). They form the original wandering cellules of post-natal life; injure one of these embryonic wandering cellules and cancer follows, as a consequence of aberrated embryonic Langhan's cellule function; but not of any other cell as of a mature epithelial, connective tissue, adult or other embryo cell.

Ovule — the unimpregnated egg; Figs. 10-11.

Ovum — the impregnated egg; how often are these two terms used indiscriminately even by authors of superior reputation; naturally confusion results; even in standard histologies and embryologies this confusion occurs. Figs. 12-13.

The ovum is the ovule impregnated, its cells and tissues changed, Figs. 12-13-16-17-25-26-27 and 28; altered by the new growth control hormone of pregnancy; nothing is destroyed or regenerated in the ovule as formerly taught, merely changed; as the corona radiata cellules changed into and form the primal syncytial cellules of the chorion; the zona pellucida of the ovule changed into the chorion; the vitelline membrane and vitellus into the yolk sac; the gestation cyst with its macular spot within its macular membrane becomes the embryo trace enclosed in its amnion. See Fig. 66, and others.

A few moments afterward the impregnated ovule reads ovum, with chorionic shell and villi, with its syncytium and Langhan's cellules; primal white blood circulation; the chorionic cavity containing the diminutive embryo trace within its amnion; yolk sac; all depending upon syncytial cellule amoeboid-conduct for nutrient pabula and for further life and growth.

Embryonic, extra-embryo, chorionic Langhan's cellule, is always immature, whose intrinsic function is to be differentiable into maturer ultimates; and continue so throughout life.

Embryonal has in mind, embryo, final maturity of cells and tissue, they having reached practically their ultimate differentials, as epithelial, connective tissue, etc.; they do not differentiate into other cells than themselves.

Normal has reference to regular conduct in function, in histology and pathology of cells and tissues.

Abnormal has reference to physiologic conduct when it becomes irregular or aberrated.

These explanations may seem superfluous; but not so when conversation and discussion prove otherwise.

THE EMBRYONIC CELLULE, THE PRIMORDIUM

This particular embryonic cellule, as cause of cancer, has been found and fixed by me. The embryonic cellule, the cause of cancer, is the offspring of the primal matrix embryonic cellule, the syncytial cellule, the Langhan's cellule, of the primal syncytium and its descendants. The daughter cellule of this primal embryonic cellule through injury, traumatism or other insult becomes aberrated in proliferation and in physiologic function, and thus becomes the cancer cellule. In another point, I differ with the masters in that the Langhan's cellule, so-called, the cellules of the syncytium are not epithelial cells. See Illustrations Figs. 1-2-3-4-34-37-60-61. Hence cancer is not epithelial; therefore the new finding: Cancer is not epithelial. A striking reflection, likeness, of the Langhan's or primal matrix cellule, as to appearance and form is seen in every cellule of cancer, in pre-natal or post-natal life; epithelium or other adult mature cell is never so reflected.

For the junior, who should carry on in this work and who may not be as familiar with the details of this controversy, as the senior, or has not the wide literature at hand to read and judge therefrom for himself, it has been thought good to give some quotes and thoughts bearing upon this theory, Cohenheim, from such text books and special articles that are at hand and that seem meeting, for they reflect the knowledge and opinion of the pathology and histology of today.

For that reason, and to assist in clarity in comprehension, liberty is begged here to be guilty of some repetition in text and illustrations from my previous works, also on Origin of Blood and Origin of Cancer, for as mentioned, both subjects are very closely interwoven in primal embryologic study.

Those readers not so well versed in this controversy will be glad of this repetition, especially of the illustrations, for they are original

and new, quite large so that he can read and follow interpretation for himself; thus he can follow controversy at more ease and with a better understanding. In presenting these quotes, again, it has been the aim to follow as best can a few leading authorities; to show their conclusions and the parts of the Cohenheim theory they consider of importance. Naturally not all such authors could be presented here. Yet enough to appreciate current thought and opinion. I have added a few words such as I would in explanation and discussion to the class; mentioning that there is nothing here that is infallible nor reflective. To me this effort at reasearch spells: pleasure, rather than any other consideration.

THE PRIMAL MATRIX EMBRYONIC CELLULE, THE LANGHAN'S CELLULE ABERRATED; AS CAUSE OF CANCER; COHENHEIM'S THEORY

A retrospect.

Ruling out for the moment consideration of the specific cancer cellule as shown by me in 1902, 1906, 1930, 1931 and 1932. Fig. 8. Today's thought, 1933.

It seems the concensus of pathologic opinion that as yet there is no specific cellule of cancer. The London Cancer Symposium of 1928; Ewing Cancer Symposium of 1930; Delafield and Prudden, Columbia, Pathology, page 466, 1927, Wood and Co., N. Y.; who state as follows: "There is no morphologically typical cancer cell as there was formerly supposed to be"; a conclusion reflected by many other pathologies. How — what about diagnosis, early and late?

Then what is meant by the expression cancer cell as used almost daily in cancer thought, by nearly every writer on cancer?

An idea, only? speculative and without particular physical form or specificity? Rather a formidable weapon to compare and judge with!

If this be so how can conclusion be made for or against an embryonic cell theory as cause of cancer, as claimed by these many previous writers, like Lobstein, 1829; Hanel, 1864; Durante, 1874; Cohenheim, 1877?

My finding, fixing and demonstration of the Langhan's cellule, Fig 1, as embryonic cellule, is histologic corroboration of those masters' indefinite embryonic cellule theory and is corroboration, by histologic cytology, only, from cells and tissues of human ova from the 2-8th week of growth; from personal specimen of cancer and from personal interpretation. A cancer cellule is daughter of this primal matrix

embryonic cellule, aberrated in the stage of proliferation. This daughter cellule so aberrated is the causative cellule of cancer and is to be seen in all cases of cancer.

By way of parenthesis just here.

It is interesting and not a little amusing, to read, 1933, positive assertions that as yet, 1928-1933, there is no specific cellule of cancer. Still in illustrations, of cancer mechanically good, in their text books, I find the specific cellules of cancer; in some cases outstandingly so. In the difficult melanoma, blurred as it is with melanin blotches, the large round cancer cellules and others, even the diminutive cancer cellulettes of the cancer cytology are easily to be recognized; Boyd, Fig. 78, page 222.

In the carcinoids, pre-cancerous see later below, Figs. 4-64-65, are perfect pictures of all cancer cytology, excepting the spindle shaped cancer cellule.

Even the Journal of the American Medical Association, knowingly or otherwise, gives a splendid picture of the specific round cancer cellule in Fig 12, page 1215, of the October 14th, 1933 issue, by Dr. Richard W. TeLinde, in "Cancer-like Lesions of the Uterine Cervix."

Having the specific cancer cellule before us, not speculatively so, as before, but from histologic demonstration that is so plain, it can be physically proven by any worker, therefore today a newer conclusion seems to be in order, viz., that there is a morphologically typically cancer cellule, the specific cellule of cancer. Then and now only can judgment be rendered as to the merits and accuracy of the Embryonic Origin Theory of Cancer, of Cohenheim and others. However this newer thought will surely meet with doubt and positive negation. But can this doubt and positive negation be expressed in terms of histologic cytology rather than in mere speculative text?

Though Cohenheim's theory has been and is today questioned and denied by many it is wonderful in accuracy of prognostication; of origin of tumors and in detail of explanation of tumor growth. His recognition of local irritation as cause of cancer; his forecasting of mechanical irritation as cause of cancer; picturing, anticipating the efforts at artificial cancer provocation of today. And too, this is of the remarkable, as he himself states and admits, that his theories are based on speculation only; hypothesis only, postulates and guesses; nowhere does he suggest that he or they had discovered or fixed, the certain matrix embryonic cellule he imagined, or the locus of origin; like

others believing it to be of embryonal epithelial nature, a term rather general than specific.

Yet in this one point and only one point, the nature of the embryonic cellule, is there difference of opinion here.

THE LANGHAN'S CELLULE NOT EPITHELIUM

The Langhan's cellule, as explained in previous works, is not epithelium, though considered so by most writers. Thus there was and is established a new pathological dictum; Cancer is not Epithelium.

In this newer interpretation of earliest primal syncytium of personal histologic specimen, it was no easy task to so interpret primal ovum histology, in face of so fixed opposite views or accepted histology.

Picture your confusion and doubt in reading early histologic specimen of syncytium, Figs. 15-18-19-34-35-37-39-41-43-45-60-61, with other findings in mind over against such positive text book interpretation, that read: The syncytial Langhan's celllules are "cells, epithelial cells", "they are destroyed", and nothing further as to origin, formation, function and destiny of those matrix cellules. However, out of the confusion, came other findings quite different from those suggested by accepted opinion. That the syncytial cellule, the primal matrix embryonic cellule, originates from the carried over corona radiata cellules of the ovule; like the carried over zona-pellucida, gestation cyst, chromosones, vitellus, vitelline membrane, etc., Figs. 10-11. As syncytial cellules the Langhan's cellules, Figs. 1-4-14-15-18-19-21-25-26-34, they amoeboid, as controlled by the normal growth hormone, their environmental contact cells and tissues for nutrient pabula to the ovum structures, including the embryo from the trace further; they digest the compound plasm of the syncytium; the peripheral chorion and villi plasm plus the absorbed plasm of the Langhan's cellule amoeboid conduct; the syncytial cellules wander from their original position in the syncytium into chorion and villi stroma, blood spaces and blood vessels; see Figs. 15-18-23-32-33-34-35-36; they are immature nucleus-cellules only, and differentiate into other ultimates; as into primal blood corpuscles of the first or primal white blood circulation of the ovum, Figs. 32 (7), 33-34-35. It is seen that the Langhan's cellules are not cells in the ordinary meaning of the word cell; they are nucleus-cellule only in size, being much smaller than the ordinary cells, about the size rather of an ordinary nucleus only; 3.5-4m. dia.; the syncytial cellules are multinucleolated in structure but without a characteristic surrounding cytoplasm. See Figs. 1-4-5-6-7-37-41-43. Finally

it was found that the syncytial cellules are not epithelial, though accepted histology rules they are epithelial. Figs. 2-3-37-60-61, compare with 1-4-65-34-8-9-55-56-58-etc., 2nd to 8th week.

When and where has it ever been shown that epithelium, endothelium, connective tissue cell, adult cell or any other mature cell, has left its primal position and wandered into blood vessel, into circulations or stroma and there proliferated as epithelium or other cell, amoeboiding its contact tissues, replacing them with characteristic epithelium, etc.? Never, not even the leukoplakia.

OTHER DIFFERENCES BETWEEN THE LANGHAN'S CELLULE AND THE EPITHELIUM

And here is another newer thought. The normal syncytial cellule amoeboids its contact cells and tissues but immediately passes on this pabulum to the ovum in general, for future differentiations and upbuilding of the ovum as a whole, including the embryo. But in the Cancer all this amoeboiding pabula of contact cells and tissues, is retained by the cancer cells themselves, no division whatever, as a consequence this is one of the explanations for the fierce and rapid multiplication of the cancer cellules and rapid increase of the specific cancer tissues.

In Fig. 15, note the inflammatory exudate marking the margin of the small decidua serotina. How the exudate is gradually disappearing due to the amoebic conduct of the inrushing normal Langhan's cellules. Not only is the exudate gradually disappearing but the protective epithelial, decidual cells of the serotina itself is being affected; its epithelial cells are disappearing. This is a normal process due to the presence of growth control hormone characteristic in the Langhan's cellule normal conduct. Let the normal growth control hormone be absent, then the cancer with great devastation will follow.

Here again is proof that the Langhan's cellule is not epithelial. For where is the histologist that can state, epithelial cells devour, amoeboid epithelial cells for further growth and development of self.

Nowhere in all epithelium cytology is there such a picture of an epithelial cell or of its proliferation, showing nucleus separated from its surrounding cytoplasm, Figs. 32-45-etc. There is a physical union between epithelial nucleus and its surrounding cytoplasm that make epithelial cells, always, as a rule, one nucleolus, one nucleus with its surrounding cytoplasm; never otherwise and this dead or alive. Never does one see epithelium conduct like Langhan's cellule, and especially

as seen in Figs. 1-4-65-32-34-36-39-41-43-etc. Langhan's cellule is always nucleus only, with multiple cellulettes, nucleoli. Check these features throughout all the reproductions of this series. As has been mentioned, at times researchers have endeavored to sketch in outlines suggestive of cytologic surrounding cytoplasm; this, much confirms the fact that the Langhan's cells are without surrounding cytoplasm. In every picture of epithelial area or cell, nucleus and cell and cytoplasm are one, and always recognizable as such; Langhan's cellule on the other hand is nucleus only, multinucleolated, but without surrounding cytoplasm; for crucial contrasts see Figs. 1-4-2-3-58-61-etc.

Hence in epithelium proliferation and placement there is no such feature as that seen in Figs. 34-32-36, where nucleus only leaves its primal position to wander into blood vessel or stroma.

At times Langhan's cellules seem to show a slight cytoplasm encircling, but this is only exceptional, stromal, and irregular. See Fig. 45.

Epithelium is one nucleolus, within one nucleus, surrounded by one cytoplasm. Epithelium is mature, fixed, does not wander from original position into other tissues or proliferate into anything but epithelium. The syncytial cellule, on the other hand, wanders from its original position in the syncytium into villi, chorionic, and general stroma, and becomes the "original wandering cellule" of the body, see Figs. 15-18-19-25-32-34-35-36, and so continues throughout life, pre-natal and post-natal. This Langhan's cellule is the ancestor of the wandering cell, well known in post-natal life. Epithelium never amoeboids its neighbor or maternal tissues to make room for ovum growth. On the contrary, the decidual cell, an epithelial cell, Figs. 2-3-15, is a passive protector, defender cell against the approach of the antagonistic embryonic cellule of the chorion and villi, Fig. 15.

The Langhan's cellule, the syncytial cellule, is primal matrix embryonic cellule, as mentioned, becomes the first blood corpuscle in the ovum, as well as in the embryo itself, Figs. 20-28-29-34-41-42-etc. In both structures, the characteristic blood corpuscle picture to the 5-6th week of ovum growth, is the syncytial form. See Fig. 41, etc. Endothelium, Figs. 39-42-43-44-45, though so claimed, does not originate blood corpuscles. Again, it will be remembered that in solving the Origin of Blood in the human, early embryology acknowledges that the source of the primal blood corpuscle of the primal blood circulation of the blood of Pander's blood island, in the chick, is unknown. Here in the human it has been shown that in the Langhan's

cellule, the primal matrix cellule of the syncytium, is that origin. Later I will show that in the avian and sauroid the origin of the primal blood corpuscle is in the same analogous corpuscle in the analogous chorion of the egg; and that such origin of blood in the avian and sauroid is not in the much later, comparatively speaking, the red mononucleated blood corpuscle, the erythroblast; in the human the erythroblast first showing itself about the 5-6th week. See Figs. 39-43-44-45.

All this tends to show where the origin of a primal matrix cellule lies, in the earliest cellules of primal life, in the syncytium; they differentiate into diverse other ultimates as function of a constructive cellule; all this in the normal embryonic matrix cellule. Let this normal cellule in its normal distribution as constructive differentionable cellule become misplaced in the embryo; let it be included in the maternal tissues; so easy of being carried into other tissues through the circulations, thus the cellules and their cellulettes are carried and distributed by the maternal and embryonic blood circulations into abnormal loci; they remain latent, dormant or atrophy in their new conditions. Figs. 18-23-25. If they are later aroused, they still possess the potentialities of constructive growth characteristic of a primal matrix embryonic cellule; still capable of physiologic cellule function, and there may follow new growths as benign dermoid cysts, ovarian cysts, etc., still under normal growth control, showing imperfections in growth comparable in the degree of disturbance in individual matrix differentiation and principle of growth at the time of such misplacement or inclusion.

Again, injure one of these primal matrix embryonal cellules and their cellulettes, there is no change in the form of the cellules, but in their intrinsics, chemical and physiological; these changes and aberrations cause change in physiologic function. Now the cellule changes from the normal to the abnormal cancer cellule. Now this injured primal embryonic cellule, just before normal, loses normal growth control hormone or principle, becomes and continues hyper-prolific only, losing all ability to advance to further normal differentiation into other normal ultimates; this fierce hyper-proliferation of the abnormal cancer cellules creates an increased demand for greater nutrition, hence normal food supply not being sufficient to meet this increased food demand, the abnormal cancer cellule is thus compelled to forage among its environmental contact cells and tissues, exercising its now new increased powers of amoeboid digestion and of uncontrolled proliferation, and destroys as it amoeboids and grows, always at the expense of

its surrounding environmental tissues; and the areas thus devastated, the cancer cellules replace with specific cancer cellule tissue. See Figs. 4-8-61-etc. Thus are formed the adeno-osteo- and other hyphenated forms of carcinomata, in which the mater principle cells and tissues give way to the specific cancer tissue.

Finally again now, what other cellule is there in early ovum growth that could meet all these conditions and of abnormal function; growth and amoeboid substitution of normal tissue, ultimately causing death from exhaustion? None!

Too, what other cellule of embryonic or other stage of life is seen reflected in all cases of cancer. Again none! The semblance, likeness of the primal matrix embryonal cellule, the Langhan's cellule, is seen reflected and stands out in all cases of cancer, as daughter cellules, aberrated, the multinucleolated cancer cellule. See Figs. 4-8-55-57-58-60-61.

Again when the artificial cancerist provokes his artificial cancer by irritation, traumatism or chemistry, what is meant? His physical irritation is not the cause. It is only the physical or traumatic means of provoking cancer wound reaction from a normal traumatism. Stop the physical means, irritation, as insect, needle, tar or other chemical, there is recovery as in an ordinary normal wound; unless he has gone to the extent that he has injured some embryonic cellule, to the point of not destroying it intrinsically; only injuring or disturbing its intrinsics and chemical relativities, so that now there is new, abnormal physiologic function, the abnormal, the cancer; but no change in structural appearance or form.

Picture the needle point or the chemical passing through the wall of the cellule, thus wounded, escape of contents would follow and death and end of any physiologic function. See Fig. 48.

For and when artificial cancer is successful, there must be an injured cellule or cell that receives this injury; to originate and disseminate the new physiologic, abnormal function; the needle alone does not and cannot do this.

Now, what other cellule could be so affected in pre-or post-natal life, than the Langhan's cellule, the embryonic? Many diverse cellules, mature and fixed lie below the point of injury of the artificial attempt at cancer. Like in all wounds there are epithelial, basic cell, connective tissue, bone, muscle, nerve, etc.; but none of these are affected by the artificial cancer attempt. However, several conditions cancer study has fixed.

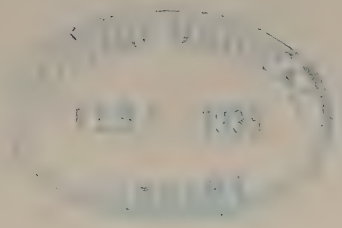
Cancer is immaturity. The cancer cellule has a likeness to its mater primal syncytial cellule stamped upon its appearance. Following the old law of nature, like begets like. Cancer is progressive, not retrogressive in evolution; cancer cellule begets only cancer cellule; cancer cellule physiognomy is by direct descent, not in the nature of cellular metaplasm, anoplasm, transmutation, dedifferentiation, atavism or other reversion; the life courses of mature epithelium and immature cancer cellule are diametrically opposite. In the cancer metastases are seen the likenesses to normal grandmother as well as to aberrent mater daughter. See Fig. 4.

What then is this cellule that functions thus? The specific cancer cellule in life, the embryonic Langhan's cellule only, pictured and anticipated in the Embryonic Cellule Theory, the Cohenheim Theory.

Again now over against this demonstration of the embryonic cellule, the idea of the theory. What other cellule in the body, is there here under the needle and chemistry that could meet these conditions of finding and fact? There are other mature fixed cellules; they do not and cannot bear the likeness of the original primal matrix, constructive cellule, the Langhan's cellule. Not the mature, fixed epithelium, connective tissue, nerve or other cell.

This primal syncytial cellule, the Langhan's cellule, whose likeness is seen in all cancer cellules, is that cellule and that cellule alone; the original Embryonic cellule.

Based on finding and fact of histologic cytology, not speculation, assertion may now be made that "The Embryonic Theory of Cancer" has been demonstrated and amply so; and that cellule fixed as "The Specific Cancer Cellule of Today"; the aberrated Langhan's cellule.



Citations in Part Only, of the Opinions, Pro and Con, Held by Various Authors of the Cohenheim Theory, as Causation of Cancer.

The Cohenheim Theory
As Discussed by Himself

From Lectures on General Pathology by Julius Frederich Cohenheim, Berlin, 1884, translated by Alexander D. McKee, Dublin, 1889. Special mention is made here of:

Misplaced Embryonic Cells.

Superfluous Embryonic Cells.

Unappropriated Embryonal Cells.

Rests, embryonal cells, which have retained their embryonal characters.

In forming theory:

Hypotheses.

Postulates.

Guesses.

Cohenheim believed that tumors developed from masses of simple or complex tissues, misplaced during embryonal development. Or, they arise from small groups of superfluous cells which have retained their embryonal characteristics; but are not necessarily misplaced, superfluous, etc.

The sudden development of the cells, he referred chiefly to changes in the blood supply. . . . . The only point on which Cohenheim lays stress is that the real cause of the subsequent tumor is to be sought in the fault of irregularity of the embryonic rudiment. We assume in accordance with the view formulated by us, the existence of an excess of cells as compared with the physiologic standard, and of which excess a tumor may ultimately develop. Cohenheim wishes once more, however, to warn you against adhering too closely to the expression: Superabundant cell material; it would be perhaps more correct to speak of a material having an inherent potentiality for subsequent tumor development. . . . . So urgent is he (C) upon the matter of the embryonal nature of the primordium that his very definition of tumor: "an atypical new formation in an embryonic rudiment" . . . . hinges upon it. Cohenheim referred the origin of cancer to the proliferation not of mature but of embryonic epithelial cell.

Some Further Lines from Section Two

Page 756. Among the supposed direct causes of tumor, none however play a more important rôle, than the so-called "local irritants of a mechanical or chemical nature, the local traumata." (Anticipating the artificially provoked cancer of today. Dr. S.)

No evidence for the infective origin of tumors.

Inoculation with carcinomatous substance; negative in result.

Page 760. True, if you ask me wherein the abnormalities consist, in the disposition of the embryo that becomes the starting point and cause of a tumor, I could only answer by hypothesis.

Page 779. A tumor is an atypical new formation starting in an embryonic rudiment . . . . (Nowhere does Cohenheim discover or speak of a specific cellule as causing the cancer, or its place and origin or any of its differentiates; he mentions the indefinite embryonic epithelial cell only, as the causative cellule. Dr. S.)

Morris, Sir Henry, M.D.; Surgeon and Anatomist. Cancer and its Origin, Lancet, Dec. 12, 1903, P. 1637.

Quote.

P. 1640. Tumor cells, like normal cells, breed true. Connective tissue cells cannot produce epithelial cells. And epithelial cells invariably produce their own kind and no other.

Tumor Germ Theory — Cohenheim's Theory.

Here is one theory which is more consistent than any other with all that we know about malignant diseases, which fully explains the origin of very many non-malignant tumors, and is, I believe, destined to be accepted as the true explanation of the genesis of malignant new growths. It is the theory which was brought out by Durante of Rome about the year 1874, and a year or two later by Cohenheim, 1877.

(Thiersch, Ecker, Mayo, Lebert, Betrach, Klebs, Rindfleisch and others had said that carcinoma is the result of the proliferation of pre-existing mature epithelium; thus breaking away from the doctrine of Virchow, Rokitansky, Förster, Cornile and Ranvier and others, who considered carcinoma cells to be metaplastic products of the connective tissue).

Cohenheim went a step further and referred the origin of cancer to the proliferation not of mature but of embryonic epithelial cells.

Cohenheim insisted that a tumor never had its origin directly or indirectly from mature tissues. And herein lay the difference between Durante and Cohenheim, for while Cohenheim regarded the matrix of embryonic cells or Tumor Germ as always of congenital origin, Durante thought that elements from which arise all neoplasms and especially the malignant ones, are, either those which have preserved in the adult organism their embryonic anatomical characters, or which

have acquired them again through awakening of their chemical and physiologic activities . . . .

COHENHEIM THEORY INSUFFICIENT BY ITSELF TO EXPLAIN

(1) Formation of Malignant new growths in scar tissue.
(2) In immature callus
(3) In unabsorbed inflammatory products, and,
(4) In part after injury and operations of various kinds.

EVIDENCE IN FAVOR OF THE TUMOR GERM THEORY

(1) The existence of congenital matricies of embryonic cells.
(2) The existence of post-natal formations.
(3) The existence of continuation in dormant state.
(4) The causes which aroused the matricies into activity.

Discussion (Dr. S.).

Page 1640. Does not expression here suggest an absence of influential consideration of theoretical metaplasia, anaplasia, transmutation and dedifferentiation?

Here is again confirmation of the embryonic immature cellule nature of cancer origin; denying active influence of mature cells.

All four conditions, insufficiencies, in which traumatism and injury to an embryonic wandering cellule occurs; this injured cellule may become active immediately and early cancer so follow; such injured embryonic cellule may remain latent; or, slightly injured or more seriously injured, until aberration of cell contents and function follows, creating disrelativity in cell contents, and so cause chemical reaction to change normal physiologic function into abnormal cancer.

Either manner when aroused as by shock or injury, brings sudden increase of blood supply, awakens the potentialities of cancer latency and active cancer follows. In a measure, like the cancer cellulettes latency, following such latencies after operation, to the 10-20th year.

Another thought here. (Dr. S.) Are not these normal wandering embryonic constructive cellules and cellulettes, Langhan's Cellules, in post-natal life and because of their great proliferative and constructive powers, are they not themselves the instruments and instrumental in the restorative processes of wounded and injured tissues? Such as after serious losses of blood, from lacerated, and gun shot wounds, burns, hemorrhages, etc.; reparative blood and tissue processes; the sudden appearance of great numbers of such reparative cellules; and as inquiry questions — where do they arise, from medulla or where? As yet

unknown sources. See Figs. 33-36-43-45-49; cellulette proliferation almost hidden and undiscovered.

Opinion here would venture: Not alone from the medulla but from great proliferation of the embryonic wandering cellules in the tissues of the body; responding to the call locally of the necessities of cell and tissue upbuilding as in ovum days. The medulla might be a source but the actuating unit is it not the embryonic wandering cellule and cellulettes stimulated by the necessities of serious emergencies. For example, see Figs. 20-29-34-35-36-39-41, where the types of the blood corpuscle are still syncytial Langhan's cellules, and ready to meet all emergencies of the body; as shown hitherto.

Though the Langhan's type cellule seems to disappear in the blood stream after the 5-6th week, the wandering cellules with their cellulettes, still continue to roam the body; further the Langhan's cellulettes appear in the blood stream up to and after the 5-6th week, see Figs. 41-42 and 43, and appear as the blood cellulettes (blood platalettes). For both the wandering cellules of the body and the blood cellulettes of the blood are refreshened from the continued normal proliferation and endopedesis of the Langhan's cellules of the syncytium into stream and circulation of the blood to the last minute of pregnancy. See also cellulettes in Figs. 45 (2) and 49 at 7-8th week.

Bland-Sutton, Sir John, Tumors, Cassell and Co., London, 1917.

Quote:

In appearance there is nothing characteristic of the disease (cancer). Nothing to identify it as a malignant cell. The Cohenheim theory as an explanation for Origin of Tumors, it has signally failed. Carcinoma is due most probably to a micro-organism which stimulates the normal epithelial cells, etc.

P. 268. The embryonic theory has signally failed. Experimental inquiry did not support the theory and as an explanation of malignant tumors it has signally failed.

Discussion (Dr. S.)

The theory of embryonic origin may seem to have failed previously to 1902, but not since then. Finding primal matrix embryonic normal cellule, Langhan's cellule, and showing cancer cellule as descendant direct daughter offspring of same, histologically not speculatively, would not such finding tend to confirm the Embryonic Theory.

The parasitic theory has always been popular though ever failing to encounter success.

Parasitic theory in the sense used here, post-natal, should be easy to consider and meet, compared to proving its presence and efficacy in the pre-natal cancer, neuroblastoma; a cancer well known and not subjected hitherto to intense parasitic question. Pre-natal cancer shows like cytology to the post-natal cancer. See Figs. 55-57-58-8-9-60-61-etc.

Finding and fixing the primal embryonic cellule capable of arousing and causing such changes as cancer, proves the Embryonic Theory as such cause.

DaCosta, John Chalmers, M.D., Surgery, University of Pennsylvania, Saunder Co., 1925.

Quote.

P. 292. Virchow's law — "the cells of a tumor spring from pre-existing body cells. There is no special tumor cell or cancer cell . . . . If the cells remain embryonal the growth is regarded as malignant. If they become fully developed the growth is innocent."

Discussion. (Dr. S.)

Even here with this exacting Virchow's law, the Embryonic Theory meets all such demands. The cancer cellule, the abnormal daughter cellule of the pre-existing "primal matrix embryonic cellule."

As such daughter cellule of a pre-existing embryonic cellule in pre-natal or post-natal life, cancer cellule is of regular descent. But because of abnormality, from disease, injury or traumatism, there is change in physiologic function, now abnormal, but there is no change in the physical form or structure of the cellule. This cellule then becomes specific, cancer or special. Not by birth only, but by abnormally acquired characteristics.

Because of this aberration in physiologic function the specific cancer cellule loses normal growth control and becomes abnormal, cancer, malignant, continuing so throughout its life and that of the host, destroying both through exhaustion from amoebic transformation of normal tissue into cancer tissue; unless cured; a dawn seemingly nearer than ever before. The mature cellules not losing their normal growth control hormone, continue on in differentiation to normal ultimates throughout life, with normal physiology and an innocent growth.

Conclusion.

The embryonic cellules, aberrated, Figs. 1-4-8-etc., the specific cancer cellule of today, meets all these exacting qualifications of Virchow's law, thus proving the embryonic theory.

Delafield and Prudden, Columbia, Pathology, Wm. Wood and Co., 1927.

Cohenheim Theory

Quote.

P. 394-395. Based on embryonic origin of misplaced cells.

Objection. How is it possible for embryonal remnants to develop after having been dormant for years. Objection loses its validity when it is recalled that the sexual glands, hair, mammae, and many other structures continue so dormant for years, 14-15. Much more damaging is the objection of Bashford, 3rd. sc. report, Imperial Cancer Research Fund, London, 1908, that neoplasm originates wherever the body is exposed to chronic irritation and that if they develop from embryonal rests, these must be distributed throughout the entire body, hence this explanation is no explanation at all. (They are so distributed. Dr. S.)

P. 466. There is no morphologically typical cancer cell, as there was formerly supposed to be.

Discussion. (Dr. S.)

The fact that dormantcy or suspended animation, even in the normal cellules and cells occurs, is also recognized in many other forms of nature; in animal life as well as in human. Often it is seen in plant life and in forestry; in both the usual normal and abnormal growths.

Dormantcy or suspended animation is not uncommon in cancer, where after operation and treatment seemingly cure followed; cancer recurring after 1, 5, 10, 18 years of apparent cure.

Explanation, dormantcy or suspended animation of metastases of cancer cellulettes; reawakened.

It is well recognized that rests and included or misplaced embryonic cellules and cellulettes are distributed throughout the body; both occurring in the embryo-fetal body and in the maternal body. The ease with which this phenomenon may occur is demonstrated in Figs. 14-15-18-20-23. These embryonic cellules, Langhan's cellules and their cellulettes, enter maternal and embryo circulations and in the course of blood circulation distribution, individual cellules and cellulettes wander throughout tissues, fluid or solid, and thus exceptionally become lost, included or atrophied. Likewise tips of villi, Figs. 14-15, become so distributed they even form thrombi in maternal tissues. (Schmorl.)

These wandering and included elements, cellules and cellulettes, though dormant for a time, retain their embryonic matrix growth

potentialities. Becoming aroused through shock, traumatism or injury, increased blood supply follows; benign differentiations may follow if normal growth control be not lost; thus benign differentiates in growth occur as ovarian cysts, dermoid cysts, etc.

If shock, traumatism or injury to the Langhan's cell be so great as to injure the intrinsic relativities of intra-cellular contents, naturally an abnormal change in the chemical relation of the intra-cellular reaction follows and aberrant conduct in physiologic function: then cancer cellules is the result. There is no change in physical form and appearance of cellule; the cancer cellule remains true in form and appearance to its mater cellule, the primal matrix embryonic cellule, the Langhan's cellule.

In the crucial placental or hydatid polyp, if normal growth control still continues in the retained particles of placenta, the hydatid tissues, benign growth continues and it is easy to remove them by natural or artificial means. Let normal growth control be too far lowered or lost through traumatism or injury of natural or artificial labor, then the cancer and malignant metastases result, with disappointing result in removal.

Though this thought may seem out of line here and cause some question, it is very pertinent just here, while discussing dormantcy or suspended animation.

In the important histologic inquiry as to Origin of Blood in the chick and in the human, Comparative Embryology errs when she insists Origin of Blood in the chick is in the mesenchyme, Pander's blood islands, that it commences with the erythroblast, etc.; and that such origin is analogous to origin in the human blood. These continued errors in statement are due entirely to failure to consider this rôle of dormantcy or suspended animation, as factors in such chick-blood-origin.

The primal matrix embryonic cellule, the Langhan's cellule, has been demonstrated and that its descendants in same form, structure and function, exist throughout life; and that the cancer cellule is daughter cellule of that primal matrix cellule, true in physical form but not in function to its mater embryonic ancestor cellule.

TODAY

Result: There is a morphologically typical cancer cellule, the specific cancer cellule and of embryonic, Langhan's cellule origin. Figs. 1-4-8-9 and 65.

Ewing, James, M.D., Neoplastic Diseases; Cornell, Memorial Hospital, N. Y. Saunders and Co., 1928.

Quote.

Page 97.

Lobstein, 1829, likened the growth of a tumor to that of embryonal tissue, had conceived that neoplastic growth had lost the control of the organism.

Recamier, 1829, supernumerary organs readily degenerated into cancer.

Rokitansky reported certain myxoma as derived from embryonal tissue.

Hanel, 1864, designated certain sarcomas as embryonal, because they seemed to represent an abnormal growth of the same elements which in the embryo formed normal organs and tissues.

Remak, 1864, misplaced islands of epithelial cells in tissue not formerly containing epithelium.

Durante, 1874, clearly stated that all tumors arise from embryonal groups of cells, likewise sarcoma; hence he concluded that similar circumstances must surround the origin of tumors, especially malignant growths.

The modern embryonal theory was placed on a comprehensive basis by Cohenheim, whose original views were ably supported by his own observations, and must have been steadily strengthened by very numerous contributions from many sources in the past forty years. While this is not a theory of universal application, yet that embryonal cell possessed more than any other the essential factor of tumor growth is, perhaps, the most important single fact in our knowledge of tumor genesis. Cohenheim believed that tumors developed from masses of simple or complex tissue misplaced during embryonal development, or arise from small groups of superfluous cells which have retained their embryonal characters, but are not necessarily misplaced. The idea of the embryonal character of the cells appeared to him essential. Most of the cells he held as overproductions, misplaced-rests, etc.

Quote.

P. 97. For many years before the appearance of Cohenheim's work, observation had been accumulating to show that tumors were in some way related to the embryonic growth of tissue.

P. 99. The studies of R. William Lubasch, Ribbert, Borrman, Meyer, and many others have shown that embryonal rests are far more frequent than was at first imagined.

P. 100. Cohenheim theory failed, etc. Why the embryonic cells begin to grow and when growing produce malignant cells instead of normal structures, etc. Carcinoma is a tumor process characterized by atypical and destructive proliferation of epithelium.

Discussion. (Dr. S.)

Embryonal here suggests from the embryo proper; probably embryonic would be better, for embryonal cells as epithelial, connective tissue, bone, nerve, etc.; are all mature cells or approximately so. Embryonal cells, per se, do not appear extra-embryonally at this early period, 2-4th week, or at least they do not seem to be recognizable, if so. See Peter's ovum, Fig. 13. On the contrary, the embryonic syncytial cellules are intensely active throughout all areas, extra-embryonally. The mature cells multiply but only into themselves, the mature cell does not differentiate into anything but their own, their end. Granting that some mature cells do become misplaced or included, by being carried away in blood or lymph circulation, atrophy, lysis or inclusion, would likewise be their fate. Mature cells do not cancerize.

If suddenly aroused what would follow, only epithelium, connective tissue, etc., if anything. They can only proliferate, as mentioned into themselves. But they are not capable of cancer change, they have not the immaturity and potential capabilities necessary to such a cancer change.

To have cancer there must be cellule aberration, but primarily immaturity, commencement not end, maturity; and this implies extra-embryonal, embryonic origin. And when so sought for, fixation is in the syncytium and there only, the embryonic matrix cellule of the syncytium, the Langhan's cellule.

Objection that embryonic cells give origin to normal and abnormal structures. Embryonic cells when growing produce both normal and malignant structures. This objection has already been answered. Normal structures grow from the normal uninjured matrix cellule; the other, the abnormal aberrated cellule giving origin to malignant growth, is growth from an injured matrix cellule; both cellules are daughter descendants of the original normal embryonic cellules of primal syncytium.

Since finding and demonstrating the primal matrix embryonal cellule, 1902, which is not an epithelial cell, as hitherto insisted upon by histology and pathology, and since showing the specific cancer cellule an entirely differing cellule to the epithelial cell, the conclusion has been drawn and asserted, that cancer is not epithelial, neither per se nor by transmutation. The specific cancer cellule, a distinct specific cellule, thrives by uncontrolled proliferation, destroys its environmental tissues by amoeboid-digestion and replaces the destroyed wholly consumed lethalized normal tissues by its own characteristic cancer tissue; likewise proliferates the metastatic formations, the cancer cellulettes. See Figs. 2-3-15-60-61.

All these charactertistics of malignant cellules are absent in the epithelium, a normal mature cell; the cancer cellule on the other hand is always embryonic, immature.

If suddenly aroused what would follow, only epithelium, connective tissue, etc., if anything. They can only proliferate, as mentioned into themselves. But they are not capable of cancer change, they have not the immaturity and inherited potential capabilities necessary to such a hyper-proliferative cancer change.

To have cancer there must be normal cellule aberration, but primarily immaturity, commencement, not end; and this implies extra-embryo, embryonic origin. And when so sought for, fixation is in the syncytium and there only, the embryonic matrix cellule of the syncytium, the Langhan's cellule.

Ewing, James, M.D.

Quote, continued.

P. 100. The defects of the Cohenheim's theory were brought to light by studies undertaken in its defense. They showed the mere presence of embryonal cells was not sufficient to account for their growth in tumor, and that tumors grow where no embryonal cells exist. It is necessary to consider how tumors arise from cells which are neither originally misplaced nor essentially embryonal.

Thus it becomes evident that Cohenheim's theory, while it explains the structure and occurrence of every tumor, it wholly fails to reveal why the embryonal cells begin to grow and when grown produce malignant tumors instead of normal structures.

Discussion. (Dr. S.)

It has just been shown above why both normal and abnormal malignant growths spring from one primal cellule, the Langhan's cellule, and its descendants; and too side by side.

The generalities of tumor defects referred to in this paragraph seem to be rather baffling for successful explanation. The difficulties of solving these defects are enhanced by the indefiniteness conveyed in the terms, "embryonal" and "cells," as used here; these terms are quite vague to be specific as to their clarity and meaning.

What are these cells, referred to; their specificity? What is meant here by "embryonal"? Cells from, of the embryo proper and only; or does it include cellules of the extra-embryo, the chorionic, the embryonic? The cells of the embryonic, the syncytial Langhan's cellules and those of the embryo, epithelium, connective tissue, etc., are not synonymous, though having origin at the same time, yet not in the same place. They are not similar either in form, function or cellular potentialities. The embryonic chorionic cellules being immature; the embryonal cells being mature.

Here are the most difficult phases of tumor growth conduct to explain, their irregularity. Yet when confronted with the actual, not theoretical, conduct of the normal matrix cellulettes, these difficulties readily dissolve.

The cellules of the extra-embryo, the Langhan's cellules, the embryonic cellules, those of the chorion, villi, white blood circulation, area vasculosa, are all immature in structure, form and inherent function making them changeable, differentiable into further diverse cellular ultimates.

On the other hand, the cells of the embryo are fixed or practically so, mature cells, not differentiable into other cells than themselves.

Some influence, principle of growth hormone, actuates growth from the immature to the mature. This principle or growth hormone resides especially in the primal matrix cellules, the Langhan's cellules and its descendants, especially in its cellulettes, those minute vesicular cell division proliferates, of the matrix cellules.

These cellulettes are disseminated throughout the body. At times, as explained, these cellulettes are visible, more often invisible, because of minuteness; but they are the master actuates of all primal cell growth activities. See Fig. 5. It is they that cause, bring nutrition through the primal white blood circulation, to the embryo proper, not embryo

to them. In the embryo they are differentiated by embryo hormone, as embryo necessity determines.

It is this conduct of these normal matrix immature cellulettes, distributed irregularly, invisible, included, suddenly aroused, grow as potentialities dictate, that accounts for these growth irregularities, defects in tumor growth intimated here, above, even though no specificity of growth is mentioned, as of ovarian, dermoid or other cysts, etc.; because of their primal intrinsic potentialities of cellule growth. This is a common growth phenomenon in all nature.

Thus is explained a new growth in an environment wholly foreign to itself or tissues and apparently springing from nowhere. A similar example of the invisibility of the activating agent is the growth unit in the Rhous Chicken Sarcoma. This agent, like the cellulettes here, is so small that it is invisible, so small, elastic, yet firm, that it gradually passes through the crevices of the filters, to come through so minute as to be unobservable and uncallable, though retaining its infective agent; and still so effective as to incite a new growth in the tissues of the to be infected chicken.

What was the means of transmission here; some infinitely minute vesicle like here in the primal cellulettes. Even if the Rhous Chicken Sarcoma agent be chemical, as asserted, chemistry must be conveyed by some means of transmission.

There is analogous but limited actuating conduct in the cancer and its cancer cellulettes, Figs. 8-9; both conducts, normal and abnormal or cancer, of the cellulettes have been mentioned in previous works.

These normal cellulettes, Fig. 5 (5), like all normal cellules, seen or unseen, if physiologic conduct remains regular or normal, normal growth follows. Let even these normal cellulettes become irregular in conduct, as through aberration, normal deficiencies in growth character will follow, proportionate to the loss in regularity of conduct of the cellulettes. Hence these defects, irregularities, in tumor growth, due to embryonic normal irregularity in physiologic function.

More detail explanation concerning these cellulettes, normal and abnormal (cancer) cellulettes, see below.

MacCallum, Wm. G., M.D., Pathology, Johns-Hopkins, Saunders and Co., 1928.

Quote.

P. 1005. In practically no case has the origin of a tumor from endothelium been proven.

P. 1130. Cohenheim's idea was that at some stage of embryonic life, cells or blastomeres might become isolated while still possessed of great energy of growth and potentiality. It would have carried them on through the development of some specific tissue of the body, had they remained in their normal connection with the rest of the cells of the embryo.

P. 1131. Wandering cells are found in the crevices of other organs in post-natal life.

While the Cohenheim theory may explain perfectly the teratomata and other growths which are obviously related to fetal inclusion, it does not explain the malignant type of growth, since it does not explain why the cells of the tumor behave differently from those of an embryo, in that they continue to grow in the same atypical form and never proceed to anything resembling the end product of tissual growth.

P. 1133. We are left with the impression that there are somehow produced a sudden, profound and permanent change in the character of cells themselves and that other tissues which are invaded or formed as a stroma, are affected by their activities; but although we recognize this irrevocable change, we cannot assign a reason for it or even tell precisely in what structural alteration it may be recognized.

P. 1033. No doubt in time we shall have a reliable morphological criterion by which we may say definitely that an isolated cell is a cancer cell or a normal cell, but at present, 1928, no such criterion exists and we rely upon the arrangement of the cells and their relation, in their growth, to the surrounding tissue in which the individual tumor cell looks so precisely like the normal cell.

Discussion. (Dr. S.)

In 1902 assertion was made that cancer is not epithelial; did not spring from epithelium; was not atypical proliferation of epithelium.

This conclusion was based upon interpretation of histologic specimen, cancer and normal, shown at that time by photomicrographs. These latter from early ova from 2-8th week of ovum growth. It was shown that the primal matrix embryonic cellule is the syncytial or Langhan's cellule of the primal syncytium, which descends as such embryonic cellule throughout life, pre-natal and post-natal. It is also the embryonic cellule solely involved in the genesis of cancer. Figs. 1-4.

In that research it was also and originally asserted that Origin of Blood and Origin of Cancer is in the Chorion; its embryonic primal syncytial cellules, the Langhan's cellules.

In the specimen of Cancer, Syncytioma, there shown, the relationship between the normal matrix embryonic cellule, the Langhan's cellule, and the cancer cellule, was shown and traced. These findings have been reaffirmed in 1906-1930-31-32 and today 1934, and without revision. The cancer cellule is the daughter cellule of the primal embryonic cellule, the Langhan's cellule. Through traumatism, injury or disease as chronic irritation, etc., causing change not in form but in cellule content, as in chemical relativity, aberration of the normal physiologic function of the cellule follows and cancer cellule. Hence two embryonic cellules, daughters of the normal primal mater cellule by descent, produce when growing, one normal, the other abnormal, malignant structures, the cancers.

The primal syncytial embryonic cellules, the carried over corona-radiata cellules, changed by pregnancy hormone, continue evolution in the ovum, in the stages of proliferation and differentiation.

It will be remembered that assertion was made in the late 80's, that the corona radiata cellules of the ovule, disappeared, necrosed in their passage through the Fallopian tube, in the rabbit. The conclusion was drawn that that feature nullified that type of ovule activity towards ovum fertility. That conclusion was error, wrong, for it seems that that conclusion overlooked the fact that those ovules were not impregnated. But it colored embryologic thought; no effort was made until many years afterward to correct the error.

An impregnated ovule conducts entirely otherwise; due to the hormone of impregnation, Figs. 12-16-18. Now the ovule-ovum is wholly antagonistically active in self preservation and consequently fiercely aggressive towards maternal tissual antagonisms, Figs. 15-18. Those corona radiata cellules under the influence of the hormone of impregnation, line up two rows deep in the uppermost reaches of the chorion as the Langhan's cellules of the primal syncytium; proliferate very rapidly, throw out a trophoderm, see Figs. 13-18, and amoeboid their way into maternal tissues, become fixed there and ovum-embryonic growths continue. No death of corona-radiata influence whatever; on the contrary only change into the primary ferocity of the Langhan's cellules that confirms life by amoebic activity to the new ovum. See Figs. 25-26 (8).

If such an embryonic cellule is injured in the stage of proliferation, physiologic function is changed, so, that it continues only as that injured cellule; that its next stage differentiation, is aborted there in proliferation as cancer, never differentiation into further normal other ultimates. Thus arise two embryonic cellules from a normal mater cellule; the one still normal in function, the other abnormal in function, the cancer cellule. Side by side the one gives origin to normal growth structures; the other to abnormal malignant growths, cancer hyper-proliferation, its only function left it, because of aberration through injury or disease.

The primal embryonic cellules have been shown descended from the corona radiata cellules of the impregnated ovule, to become the syncytial cellules of the primary syncytium, the primal matrix embryonic cellules, the Langhan's cellules and their descendants. See Figs. 10-11-1-4. Thus is shown the complete link in life's chain between the life of yesterday and that of today. No breaks or skips whatever in the chain. This explanation here is not only of much interest but becomes of vast importance; for it must be remembered that the assertions made in text books, that these cellules, Langhan's, toward the end of pregnancy are destroyed; on the contrary they exist and persist in form and function throughout all life, see Fig. 53, aside from the fact that the corona radiata cellules assist in Langhan's cellule formation; no corona radiata cellules, no syncytial, Langhan's cellules.

In the villus they exist as syncytial, Langhan's cellules, throughout pregnancy; and also in the stroma of the pre-natal body as the "original wandering cellule," wandering throughout all tissues of the body general, all the time disseminating their cellulettes, visible or invisible; the post-natal body inheriting them at birth from the pre-natal body. Thus instead of being destroyed, they play an important rôle in the post-natal body where they can be looked to for their post-natal appearance and activities.

It is these "wandering cellules that are among those wandering cellules found in the crevices of other organs in post-natal life."

As explained above, when the daughter cellule of the normal matrix cellule is traumatized or injured, two cellules are then noticeable, running side by side; the one uninjured, the normal, giving origin to further normal differentiates; the injured one become abnormal, aberrant, because of those traumatic changes, losing the power of normal growth control principle or hormone, resulting in cancer cellule. Thus there

are two growths characteristic in the body general, both descendants of the normal primal matrix embryonic cellule; when one of them is injured, the normal and the cancer growth result, side by side.

Again it will be remembered that these early cellules, as seen in these illustrations, are cross sections of the whole cellule. In Fig. 48 more of the cellules are seen whole, still unsectioned, and show small vacuoles in their walls; these vacuoles mark the openings through which their minute cellulettes are extruded, even before total cellule breaking up. No degeneration whatever, as thought at times as explanation for these vacuoles. This vacuole condition is seen in other areas, as in the 3-4th week, only here they show up more plainly. Later in this work it will be shown that Dr. Dean Lewis mentions these vacuoles in some cellules of his case of carcinoids.

In Fig. 5 (5) these small cellulettes are better seen and their formation into long narrow links; at (2) there is an interval in the rim of the wall suggestive of nuclear cellulette extrusion, even before rupture of the ripe cellule. This phenomenon of vacuoles is common in these early cellules, and accounts for the presence of the cellulettes before breaking up, when there are many cellulettes liberated, some visible, others invisible. A similar process is true in the cancer cellules, liberating the cancer cellulettes, the cause of cancer proliferation and metastases.

Roussy, Gustave, Directeur de Centre Anticancereaux de Villejoif, Paris, 1928. London Conference Cancer, 1928. Page 14.

Quote.

P. 15.

EMBRYONIC THEORIES

But above all the embryonic theories of cancer have almost wholly lost their value in view of the acquisition of experimental cancer.

THE THEORIES OF ACQUIRED CELL CHARACTERISTICS

The theories that refer cancerisation to acquired cellular phenomenon, are, and with reason, the most generally accredited at the present time, 1928. It is to Virchow that we must undoubtedly give the credit for having first conceived a rational theory of cancer and building the irritation tneory on the basis of pathological anatomy. He attached a capital importance to the rôle of "inflammation and of chronic irritation in the genesis of cancer."

Ribbert extended the theory of Cohenheim by insisting that the segregation of tissue cell may occur in the adult as well as in the embryo; that it might be acquired as well as being congenital.

Doubtless the development of cancer in burns, scars, in cicatricial lesions and in cirrhotic livers give ground for believing in the isolation of cell groups with consequent malignant evolution; but the numerous cases, in which cicatricial and inflammatory processes do not end in cancer show that neither the theory of Ribbert nor that of Cohenheim can be applied to the majority of cases. (It must be admitted, as has been mentioned above, that not all cases of scars, burns, callus, etc., are followed by injury or disease of the wandering embryonic cellules wandering below and in the tissues of the traumatized areas, hence no cancers. (Dr. S.).

MICROBIC AND PARASITIC THEORIES

Discussion (Dr. S.)

It is a pleasure to meet this objection, so succinctly expressed. It gives opportunity to meet all such objections as a one, and they are many, with the thought that embryonic units are not fundamental to cancer change and growth. That unit must be a constructive unit, for cancer is progressive, never retrogressive; immature not mature in growth evolution, not passive or fixed as a mature cell, like epithelium, decidual cell, connective tissue and other cells. Cancer is progress aborted; maturity is progress continued. Cancer is in the image of the mater; transmutation would be wholly dissimilar. Cancer proliferates, advances at the expense of all other cells it contacts. It destroys them and feeds upon them; no transmutation or like change here, they are wholly destroyed; somatic cells and tissues disappear entirely in the maw of cancer amoeboid digestion; as they disappear the specific embryonic cancer tissue appears, and increases. See Figs. 60-61, etc.

The areas of the normal tissues thus destroyed, are replaced by uncontrolled specific cancer proliferation tissue; their minute cellular divisions, the cancer cellulettes, are carried by the current of blood and lymph circulations to many other parts of the body; causing metastases with like malignancy, see Figs. 8-9-56-etc.

It is shown that embryonic cancer cellule springs from only one cellule, and is offspring of the primal matrix embryonal cellule, the Langhan's cellule.

What other cellular elements are there possessing these essentials, making possible, when injured or traumatised of being capable of pos-

sessing these powers of malignancy, as uncontrolled proliferation; amoeboiding all other contact cells and tissues: replacing these areas with cancer formation; metastases of like nature and finally destroying self and host because of self induced exhaustion? There are many other cellules and cells that could be utilized, but they are not.

The cancer cellule is an immature cellule. Could mature cells conduct in this manner? No, for they are passive, at the end of their differential lines; they do not, cannot amoeboid, differentiate into any other cells than themselves; they do not metastasise, etc. Speculatively yes, mature cells could do all these things, but physiologically no. Only if transmutation, dedifferentiation, reversion, were possible, as of an epithelial cell into cancer cellule; a theoretical factor only, which has not and cannot be sustained. As has been so well expressed in pathology: "in practically no case has the origin of a tumor from endothelium been proved."

The normal embryonic cellule and the abnormal embryonic cellule, the cancer cellules, are both daughter of the primal normal matrix embryonic cellule; the cancer cellule is the just before normal embryonic cellule that has been injured, changing not its form but its intrinsic chemical relations hence now change in cellular physiologic function; resulting in a changed physiologic expression to the ens malignitatis of the cancer cellule.

Artificial cancer must have an agent, a body unit, upon which to impress its injury and transmit its success as a new process. Artificial cancer proves epithelium not that active cancer unit, for nowhere is there epithelial proliferation consonant to the cancer. It is not the physical means of injury that counts in creating the artificial cancer: it is the power of those means to traumatize, to affect the sensibility of some body or cell or unit below or in the wound thus created, so as to change its physiologic function, from the benignant to the malignant; the wandering embryonic Langhan's cellule is the only cellule capable of such conduct. It is not the insect, irritation, scratch, tar or other chemical agent that is the all powerful in artificial cancer provocation; for remove them and normal recovery often follows. But injure the embryonic cellule always wandering throughout all the tissues of the body, aberration of physiologic conduct follows; hence cancer.

Discussion continued (Dr. S.)

Throughout cancer, artificial or natural, is there a proliferation of epithelium, a mass increase of epithelium at the expense of its contact tissues that suggests a process as epithelial cancer? No.

On the contrary wherever the cancer meets epithelium, there, there is rapid decrease of somatic and normal cells and tissues, especially of the epithelium; see Figs. 59-60-61, and there is a proportionate and even greater increase in the cancer mass. There may be a slight increase of local cell and tissue, at first, but that is due to the involuntary inflammatory antagonistic reactionary irritation of the traumatic physical means and to the irritation of the invading cancer process. This irritation exudate soon disappears in the maw of cancer amoeboid conduct. See Figs. 14-15-21-24, where the inflammatory protective exudate lining the margin of the decidua serotina like the decidua itself is gradually giving way to the amoebic action of the normal Langhan's cellule; but under a perfect check of normal growth control hormone, hence without injury to the mater, therefore no malignancy. However, let normal growth control be lost, then the Langhan's cellule, a now new cancer cellule, becomes malignant, and devastates without limit. As mentioned above here again is proof that the Langhan's cellule is not epithelial; for epithelial cells do not digest, amoeboid epithelial cells, as normal physiologic function; amoeboiding its environmental cells and tissues is physiologic for cancer cellules.

Parasitic cancer; the most popular opinion to account for origin of cancer in all times. Not withstanding that some of our ablest workers have striven to prove parasite as cause; "not proven" is the verdict of today. Even in the filtrated Rhous Chicken Sarcoma, not parasite but chemical reaction is given by Dr. Murphy as the cause. But to the parasitophoile, how simple, easy is your problem in post-natal life, compared to finding and explaining parasitically the too oft occurrence of such cancer in pre-natal life, as neuroblastoma. See Fig. 55.

Should the future ever show parasite as the cause of cancer, the abnormal Langhan's cellule, made so by the parasite, would still be the primal cellule contributing to the specific cellule of cancer. For it seems the abnormal Langhan's cellule is the only cellule among the other cells and cellules of the body in pre-natal or post-natal life that could offer such a parasite so favorable a plasmic affinity, for its development and dissemination. But the problem would still remain the same as today; how annihilate the abnormal Langhan's cellule with the parasite, the sole cellule offering affinity and dissemination to such a parasite.

As remarked on an earlier page of this work: Even if the change in cancer cellule intrinsics were to be discovered, the cellule itself would still roll on as merrily as ever and be efficient as the specific cancer

cellule. The great aim in cancer research is, must be: find the guilty cellule, then how destroy it! then aim and method to cure will be more direct and accurate! Not alone the cancer cell, but

What intrinsic causes life to start in the primal cellule? the ripe ovule awaits the eager spermatozoa; each electrified to a new fertilization! contact alone ensparkles that double decomposition, transformation of the old two into the new single one! what was in the spark that initiated, activated the new life?

Was it chemical, physiologic or spirit: each alone or all three in one; it created no new biologic being! speculation offers no assistance; there is hope in empirics; even though Faust failed! likewise Maimonides. The synthetic cell today is as always, a dream only, the dream of the "in vitro." Still no light on the primal cellule!

Boyd, William, M.D., Pathology, University of Winnepeg, Saunders Co., 1929.

P. 158.

Bell points out that the cells of the trophoblast, trophoderm, are at first malignant in their behavior. As development proceeds their activity becomes arrested by some unknown factor.

P. 224.

Chorionepithelioma is a tumor in a class entirely by itself, for it originates from the cells of another individual, the cells of the chorionic villi of the foetus. (For discussion see under Mac Callum, III Teratomata; below, page 68).

Chorio-epithelioma. These cells towards the end of pregnancy are destroyed.

It was Cohenheim who drew attention to the possibility that certain "misplaced cells" or "group of cells" or "rests," may act as a starting point of a tumor. Such displacements in embryonic life, are by no means, uncommon. Adrenal, thyroid, parathyroid, pancreatic and other tissues.

(In 1905-09 we conceived the idea that the chorionic epithelium was a normally malignant tissue.

The trophoblastic cells are normally malignant. This obvious point appears to have escaped description, and even notice, at the hands of the pathologists; at least I am not aware of any statement on the matter. It is this: chorio-epithelioma—the most malignant of malignant diseases, is not dedifferentiated growth as is every other malignant

neoplasm; it is a simple hyperplasia of the chorionic epithelial elements. Dedifferentiation cannot occur, for the chorionic epithelium is normally malignant and is itself the ancestor type. 1925-26.) Bell, Wm. Blair, M.D. Some Aspects of the Cancer Problem, Liverpool Cancer Committee, Page 19, 1930.

Discussion (Dr. S.)

The trophoderm, trophoblast is the peripheral proliferations into maternal tissues of the Langhan's or embryonic cellules in either uterine or extra-uterine pregnancy. See Figs. 13-18-25. The trophoderm is not primary but secondary in developmental construction, it being but offspring of the syncytium. The function is to neutralize maternal tissual protective antagonism and to forage for nutrition, hence the amoeboid-digestive conduct of the syncytial Langhan's cellules towards their environment; but always under the direct control and check of the normal growth control hormone. This prevents malignancy; on the other hand in the cancer, normal growth control hormone is missing, hence widespread malignancy. In early days of ovum growth this growth is at the expense of the more solid maternal tissues, at the same time this normal pseudo-malignant conduct of these normal cellules creates also room for the growing ovum. Figs. 25-26. Later this room-growth ceases for nutrition is gained from maternal blood circulation. Then normal growth hormone checks this amoeboid growth for room and nutrition; thus terminating this psuedo-malignant conduct of the trophoblast; the trophoderm, trophoblast in turn disappears by lysis, because of lack of necessity; while the mater syncytium continues on throughout placental life.

Bland-Sutton, 1917, speaking of this phase of the normal pseudo-malignancy of the embryonic cellule, remarks: Page 277. "Commenting upon the erosive power of the cancer cell. For many years after Virchow taught that every tissue in maternal tumors has a physiologic prototype, it seemed difficult to find a satisfactory example of the erosive power of the cancer." (Note, June, 1931, the normal amoeboid digestive function of the primal syncytial cellules of their environmental tissues, to win pabulum and space for ovum growth, is the writer's (Dr. S.) explanation 1902, for this function in the normal cellules; the amoeboid-digestive function of the primal syncytial cellule, the Langhan's cellule, is the normal prototype function of a cancer cell "erosion," so-called; Stahl-Origin of Cancer. 1902.)

Boyd, M.D.—Quote, continued.

P. 224.

"These cells towards the end of pregnancy are destroyed."

Discussion (Dr. S.)

The syncytium and its cellules is richest in development in the beginning of ovum growth and wanes in structure and importance as maturity of pregnancy nears. See Figs. 18-35-45. But it never ceases to exist ,Fig. 53, on the contrary its existence in the chorion and villi is seen very plainly at term, as the remnant syncytium with syncytial Langhan's nuclei-cellules; and not in a measure of scarcity, as suggested by the term remnant; they exist very outstandingly so, at term, the Langhan's cellules being arranged in quite large masses described as "nuclear nodules." See Fig. 53.

These nuclear nodules are also the descendants of the primal embryonic syncytial matrix cellule or Langhan's cellule; same in form and function, only now, at term, they are more passive in activity. These embryonic Langhan's nuclei wander as their forbears did, into tissues and blood circulations as before, both mater and embryo. This explains their presence in post-natal life as the embryonic wandering cellules, where they appear as the wandering cellules; always capable of original embryonic cellular potentialities in growth and function, for normal or abnormal cancer, functions.

Recognition of this unbroken feature of syncytial histologic expression is of greatest importance, both in histology and pathology; showing transmission by inheritance in likeness and function to their earlier ancestor embryonic cellules and their presence and activities in post-natal existence. Hence the embryonic cellule, the only cellule capable of cancer cause, in post-natal life.

REFLECTION

So far as histogenesis of cancer is concerned, and the part the primal embryonic cellule, the Langhan's cellule plays; the Fountain Head of Cancer and the Origin of the Blood, they lie in the same primal source, the primal matrix embryonic cellule of the syncytium of the ovum, the Langhan's cellule. My histologic specimen prove such to be a fact, therefore in these works on primal embryology and now cancer, I show the Langhan's cellule is not destroyed, but continues throughout the syncytium to term, Fig. 53, and that the Langhan's cellule exists in the neonate as the wandering cellule.

This is not theory or speculation. One can follow the illustrations and read for himself. Though the following may not be an entirely

cancer problem; where do the nuclei, primary blood corpuscles, originate in the blood, both in the human and in the chick. Histology errs in the human; she frankly admits in the chick she does not know where the nuclei of Pander's Islands arise. Does present histology render assistance? Histology generously errs when she persists in saying, that, "the red blood corpuscles are the only elements contained in the blood during the early stages of the vertebrate body." The red blood corpuscles in the human do not appear until the 5-6th week of ovum growth; likewise the primary red blood circulation of the erythroblast does not appear until after the 5-6th week. What happens in the interim between the primal ovum and the ovum of the 5-6th week; how about a blood circulation. There must be one. There is one. There can be no blank interval in the blood circulation. Certainly not. Blood circulation is provided by the primal white Langhan's cellule type of uncolored blood circulation in the early ovum to the 5-6th week of growth; then first appears the primary or first red blood circulation.

For proof of these assertions see illustrations here, especially Figs. 18-20-29-32-34-35-37-38-39-41-43-44-45-etc., showing primal white and secondary red blood circulations. In another sequel to Origin of Blood, even in the chick, I will prove that the erythroblast is not the primal blood corpuscle.

Again, all histology repeats that origin of blood plasm is due to secretion of the primal nuclei-cells of Pander's Islands. Picture the quantity and great supply of nutrient elements comparatively speaking, these nuclei must enjoy and then render. But where do the nuclei receive their substance, to so grossly secrete the large quantities of such plasm? Before they can render they must receive.

Perhaps these lines sound critical. I do not mean them as such. I am grateful to histology and pathology, as every scholar must be for the wonderful light they have rendered in endeavoring to discover and clear the many knotty problems that arise in their studies of origin and function of cells and tissues. Needless to say we are all grateful to the masters and their followers for leaving such wonderful alphabets of knowledge that we are already able to read and rhetoric where they were compelled so diligently to dig out as pioneers, letter by letter, in their efforts!

Now it is for us to show our gratitude to them by taking up the tasks where they left off and so far as in us lie, continue their work that more and more light be given to guide our juniors who must be our followers. It is in that spirit rather, that these lines are written.

In this series on early embryologic illustrations, greater stress is laid upon extra-embryo activities than intra-embryo activities; for the intra-embryo activity as a rule marks maturity, the end of differentiation of cells and tissues; on the contrary, the extra-embryo marks the commencement of differentiation.

THE CELLULETTES

THE SMALLEST DIVISION OF HUMAN TISSUE; THE CELLULETTE

Formerly the smallest division of solid matter was termed the atom. Today the Nobel prize winner shows the atom divisible still lower into the photon. Today the smallest division of human tissue, is the cellulette; normal and cancer, Figs. 5-8-9-etc.

In the human, today, the small cell is regarded as the smallest division of the human cell. This small cell has always been considered and seen primarily, extra-cellular.

In my researches into primal embryology, I found that a smaller division occurs, especially of the matrix cellule, smaller than the accepted recognized small cell of usual description. It is first discernible intra-cellular, then extra-cellular. I termed these minute vesicular cellular offspring, cellulettes, they being much smaller and earlier in appearance than the nucleoli and the small cells, as understood today. These cellulettes are often seen being extruded from the circumferences of the mater cellule before they break up into division. See Figs. 5-45-48-49.

I first thought of these cellulettes as artifacts; no knowledge was to be had of them from the text books.

Then their persistent presence in the early days of ovum growth and in various areas to the 3-4th week, compelled solution and recognition, and so was found the cellulette; the smallest division of the human cell to today. The future and speculation may bring further reduction, in term, but not in substance.

I found these cellulettes, especially distributed like a dissemination of minute seeds among the primal immature cellules, where Direct cell division, Amitosis, though doubted of occurrence, is first and very prolific; to the 3-4th week and later.

The Indirect, cell division, Karyokinesis, Fig 7 (1), appears also, but it seems later in appearance; I first noticed it in an erythroblast in an umbilical cord vessel at 5-6th week of growth. The erythroblast is usually mono-nucleated.

It will be remembered that these early cellules as seen in these illustrations are cross sections of the whole cellule. In Fig. 48, more of these cellules are seen whole, still unsectioned and show small vacuoles in their walls; these vacuoles mark the openings through which their minute nucleoli as cellulettes are extruded. No degeneration whatever, as thought at times, as explanation for these vacuoles. This vacuole condition is seen in other areas as in the 3-4th week, only here they show up more plainly. Later along in this work it will be shown that Dr. Dean Lewis mentions these vacuoles in some cellules of his case of pre-cancerous, carcinoids. See page 58.

In Fig. 5 (5), these small cellulettes are better seen and their formation into long narrow links (compare 5 (5) the normal, with 8 (7) the cancer); at (2) there is an interval in the rim of the wall suggestive of nuclear cellulette extrusion, even before rupture of the ripe cellule. This phenomenon of vacuoles is common in these early cellules, and accounts for the presence of the cellulettes before breaking up, when there are many cellulettes liberated, some visible, others invisible. A similar process is true in the cancer cellule, liberating the cancer cellulette, the cause of cancerous proliferations and metastases.

In Fig. 45, at the 7-8th week, is seen the normal cellulette in the N.W. border of cellule at (2) 3 cellulettes beaded. Here the cellulettes together are shown intra-cellule long before the cellule is ripe and ready for general dissolution. This is the same condition and expression suggested and shown in Fig. 5 (2) (5), at the 3-4th week. It also shows how minute these cellullettes must be in size when these mater cellules are still young. It also shows how easy it is for the mater cellule, before breaking up, to cast off these minute cellulettes through the minute vacuoles in the walls of these cellules before final maturity and final division.

In Fig. 49 the second cellule in the syncytial border to the right of the erythroblast (1) above, shows a similar cellulette appearance and structure here at the 7-8th week. In Fig. 8 cancer, similar beads are seen in the unripe cancer cellules, at 8 (2). Throughout these specimen search will reveal similar cellullette conditions; suggesting that such cellulette division is general in the development of the mater cellules and their ultimates, and explains why the cellulettes are at times visible, at times too small for vision and microscopical appreciation. This cellulette division continues throughout life, pre-natal and post-natal, through the wandering Langhan's cellule of post-natal life. This is the explanation to be advanced here that it is the cellulette divisions that

give origin to the blood platalettes; the emergency proliferation in the blood system after a great loss of blood, from lacerated wounds, etc., and as mentioned, irregular tumor formation.

This cellulette discovery is one of the most important new findings of early embryology, explaining many features of early multiplication, division and rapid proliferation of all forms of primary cellules; and it is hereditary, as seen in the cancer cellulettes; the blood cellulettes; and proliferation in the wandering cellules of post-natal life. It also confirms Amitosis, the great means of division and multiplication of the cancer cellules.

It is only natural that these visible and invisible cellulettes become gathered or caught in the meshes of the active centers of the body, as the breasts, uterus, the alimentary system, genito-urinary system, the lungs, the brain, etc; where they atrophy or remain latent. When aroused their potentialities are capable of new growths, or cancer. In Fig. 8(2) these cancer cellulettes are beautifully seen within the large round spinal cancer cellules, in beaded form.

As mentioned these cellulettes are seen in the mater cellules even before it breaks up; likewise they are to be seen and very readily so in the abnormal, cancer cellule. They are thrown off, extruded from the mater cellule, as migrated and extruded cellulettes, during mater cell ripening. This explains the many vacuoles seen in so many early cellules in the early days of ovum growth, 2-8th week. Figs. 4-5-45-48-49.

This recognition of the cellulettes, was in a measure compelled, for such minute cellulettes were often seen in diverse areas. They are found; (1) in the divisions of the primal matrix syncytial cellule, the Langhan's cellule; in the syncytium and in the stroma of chorion and villi. Figs 15-19-34-etc. (2) In the divisions of the primal blood cell, Figs. 41-43 to the 5-6th week; these blood cells are of syncytial type and are predominant in the white blood circulation until the 5-6th week of ovum growth. But these primal white blood cells, or uncolored blood cells, must not be confused with the white blood cells of the mature later red blood circulation, the lukocytes, which are entirely of a different nature and do not appear as a rule at this time 5-6th week in the primal blood circulation of the ovum. This is an error which I noticed has appeared in print. (3) In the divisions of the cancer cellules these cancer cellulettes Figs. 4-8-9-etc., are seen in great number in cancer cellule proliferation, accounting for cancer's rapid

growth. (4) In the very prolfic normal proliferations of these cellulettes, and account for the fierce rapid multiplication of the various cellules; accounting for the rapid increase in growth and size of the ovum as a whole, embryo and extra-embryo.

As is well known the growth in the extra-embryo is far more rapid than in the embryo proper, in the early days of embryonal life. How account therefore? Again through this rapid multiplication and proliferation of these normal extra-embryo cellule divisions yielding these cellulettes. The extra-embryo, the embryonic, is wholly immature, differentiable into other cellular constructional elements. Hence nature, growth, has endowed the immature cellule with its multiplicity of cellulettes; and without a limiting cell cytoplasm; that conduct and multiplication may be freer. As Arnold observed, one offspring for each nucleolus (cellulette). A glance only at the illustration of the Peter's ovum, Fig. 13, will show why this multiplicity and fierce proliferation of primal matrix cellule the Langhan's cellule, was necessary; to provide offspring for growth of the extra-embryo, the ovum, primarily, the greater growth in early days; as well as growth for the embryo, proper.

The mature cells and structures grow far slower than the immature. This is again suggested in the structure of the mature cell of the embryo, per se, which is as a rule one nucleolus, one nucleus with surrounding fixed, not lysic, cytoplasm, and does not proliferate into any cell but itself. These normal cellulettes are distributed through the blood circulations, especially through the primal white blood circulation in early times, throughout the body; also because of their wandering function inherited from their mater matrix cellule, the Langhan's cellule. And thus they serve also as constructional elements everywhere, their potentialities being wholly developmental.

These embryonic cellulettes, being so active in structural potentialities, they not only stimulate to the normal standard of normal cell growth, but if they should develop strains of aberration they would at the same time develop deviations in the perfect form of growth in proportion to their degrees of aberration. Thus would arise the irregular normal cell and tumor.

These cellulettes function much in the manner of disseminated seeds. They function thus throughout life, for the mater cellule continues to proliferate and is always present and active in the Langhan's cellule of the syncytium; entering the circulations they continue on

into post-natal life in the form of the wandering cellule, where proliferation and function is the same, as determined by the necessities of the body economy.

Being so diminutive and most often so invisible, they are able to grow and develop themselves, able to stimulate other cells to growth activity because of their growth potentialities, like their hormone; they can exist throughout the body, invisible yet very potential, when aroused by local or general stimulant of growth, irritation or necessity; hence normal growth follows; but if exceptionally the cellulettes become aberrant, irregular growth of cellulettes or tumor follows.

Thus at times the normal irregular, cell and tumor growth follows, the result of unseen aberrated normal cellulette stimulation; explaining at the same time these defects in theory and tumor growth as suggested in the quote given above, as to defects in tumor growth. Being irregular and abnormal in their cellulette function, so will its effect upon cell growth be; but these cell growths remain benignant because the normal matrix cellulette continues normal though slightly irregular in function.

Thus would embryonic cellulettes meet "Tumor Growth Defects" in explanation, not speculatively so for the normal cellulette is the smallest division of the human cell yet found and recognized, and is present and creative throughout the body; though recognition oft-times is difficult.

When first seeing these cellulette vesicles, Fig. 5 (5) as mentioned, I thought of them as artifacts, yet it is to be observed, they arrange themselves in links of various lengths, part of the link is colored by the stain, part uncolored, suggesting primitivity in plasm with lack of sensitiveness to the stain. In trying to explain normal growth and tumor growth, explanation seems easy when one could show or recognize the nucleoli as such activating units but often growths appear as though from an unseen or not recognizable agent, especially, "the irregular new growths or tumors," springing apparently "from nowhere and growing everywhere." No recognizable cellulettes or other such agent was to be discovered even after repeated effort to do so. Much like the efforts to discover the unknown agent transmissible in the Rhous Chicken Sarcoma, where after repeated effort in filtration nothing as yet has been found.

On one occasion in examining a fresh slide, Fig. 42 (7), blood vessel and stroma from umbilical cord at 5-6th week of human ovum, I found multitudes of such transparent minute cellulette vesicles dis-

tributed throughout the stroma. Accidentally coming down upon the slide with the barrel of the microscope, I noticed many such minute vesicles appearing below the edge of the cover glass; fearing to press further I relinquished the pressure and the cellulette vesicles withdrew within the cellule under the coverglass. Their size and consistency seemed to be similar to the multitudes of like minute cellulette vesicles disseminated throughout the stroma, like minute seeds. Thinking back to Fig. 5 (5), I thought them like to the vesicles here, and the two in Fig. 43.

Several years later, with this query ever before me for solution, what are these vesicles, re-examined this slide; then to my surprise I found that the minute vesicles had all disappeared, except two. They are the two small vesicles-cellulettes seen in Fig. 43, S.E. border of rim of blood vessel, where these two are attached to a small blood cellule undergoing differentiation. See also Fig. 33-1, 3-4th week.

Something in their primitive plasm made these two cellulettes more stable, permanent, where all those of the sister slide, Fig. 42, had disappeared. Pondering over these facts, came the suggestion; it is only a feature of growth. Hence, the explanation is that these primal cellulettes are dissolved, lysic, or disappear very much as an unseen minute unit, the minute primal element of the cellule, so small and elementary that it fails in recognition until further development and growth; as a cellulette. So came as explanation, the term cellulette, the visible and invisible minute vesicular element, of the cellule, the primitive cellule element just before the nucleolus. The nucleolus is always visible. With this explanation in mind irregular cellular growth in irregular areas and tissues, irregular new growths and tumors become more understandable, explaining growths apparently from nowhere and in everywhere.

Like their mature cellules these visible and invisible cellulettes, normal or cancer, may become misplaced or included; like rests, they atrophy or become suspended in animation. Let them be reawakened, aroused and their inherent potentialities to cellule and tissue growths will occur. Recalling again, I remembered the minute vesicular cancer cellulettes, so numerous and easy of recognition. See cancer specimen Figs. 8-9-etc. Throughout all these growth changes, the normal physiologic resistance of the body locally or in general, must not be overlooked, as of influence.

These latent enveloped cellulettes continue so inactive until urge growth compels renewed activity, renewed growth and visibility. In

the normal, normal growths; in the abnormal, abnormal growth. In the irregular growths or tumors now explanation is easy; whether in regular or irregular areas of tissues of any nature. Hence was coined the term cellulettes, to convey the idea of the smallest division of the human cellule, at times visible and often invisible; and often without color because of primitive plasm having no affinity or being too small for staining. And this color factor would suggest primal previous growth where the primal plasm of the cellulettes does not take the stain; when so taking the next step in cellule cytology occurs, the cellulette, giving way to the small cell as recognized.

When normal regular cellulette physiologic function is changed as through traumatism, disease or other insult and thus aberrated to such extent that normal growth ceases in the stage of proliferation; all further differentiations ceasing, then there is only the hyper-proliferation left; thus the abnormal, cancer irregular malignant cellulette appears, followed by the cancer cellule. And even here, too, there is degree of malignancy, some cancer cellules showing little cancer malignancy, as though normal growth control hormone still persists; this malignancy ranging from the slight malignancy up to the fiercely active acute malignant cancer tumor, the ens malignitatis, of the acute malignant cancer; all these various characteristics due to the various expressions of the diminutive cellulettes of the cancer.

Finally, as mentioned, it is these minute cellulettes, almost secretive as in Figs. 45 and 49, invisible and visible, that in cancer produce metastases. Often search with a microscope fails to show their presence in matastatic nodules. This may explain the experience of a well known clinician: "In the standard treatment of removing the cervical metastatic nodules, examination with the microscope failed to reveal cancer in sixty-eight per cent of such cases."

Is this a charge? 32 plus to 68 minus. It will be recalled that these zero marks in diagnoses come from the old school of cancerists who would and still deny the existence of the specific cellule of cancer, though it stares in the face out of every cancer. It would be interesting to learn how these results were arrived at; what cytologic conception of cancer or cancer cellule was in mind when these not easy diagnoses were made!

Another interesting case of metastatic nodules apparently without traces of cancer.

From Carcinomatous Metastases to the Brain, Dr. Eric Oldberg, Chicago, Jour. Amer. Med. Assoc., Nov. 4th, 1933, page 1458. "Case (1)—Removal of right breast 14 months before admission, March 6th, 1930. Microscopic report on the tumor tissue made by the Boston Dispensary Dept., was that the tumor was made up mostly of atypical epithelial cells, with practically no tendency toward gland formation, that it was of high malignancy and that two lymph nodes simultaneously submitted showed no evidence of metastasis. April 21st, 1930, Dr. Harvey Cushing removed large surface tumor, 5 c.m. in diameter from left parietal region; recovered; distinct benefit was given, two years more of useful and comfortable life. April 23rd, 1931, reported feeling fine, no signs of intercranial recurrence. Spring of 1932 began to fail—death June 4th, 1932. Autopsy revealed extensive recurrences along site of mastectomy, sternum manubrium, etc." Further details see original article.

Discussions (Dr. S.)

Reports of these cases of metastatic nodules apparently without revealing cancer, are not rare. Yet if it be allowed: how could diagnosis be made here; was there, is there knowledge of the cancer cellules here? There must have been a metastatic element here and in the cases of hundreds of other nodules that occur as regular expression of cancer. Could it be that, non-recognition of the small cancer cellulettes, the small round cancer cellules and the small transitional cancer cellules, Figs. 8-9-4, were of assistance here, in bringing about this failure to recognize the cancerous element in these cancerous nodules. Figs. 62-63-etc.

What cytology of cancer has the ordinary and the special writer in mind when he writes of cancer and the cancer cell? Or when he microscopes for cancer. He asserts there is no specific cancer cellule. What cytologic authority has he to say so, not having a cell or cytology in mind or presented to judge by? Yet all cancer cytology is the same today, yesterday and tomorrow; still he persists there is no specific cancer cell or cancer cytology. How judge? How would he recognize cancer, only after great swelling, pain, destruction or cachexia?

"No doubt in time we shall have a morphological criterion by which we may say definitely that an isolated cell is a cancer cell or a normal cell but at the present time, 1928, no such criterion exists and we rely upon the arrangement of the cells and their relations, in their growth, to the surrounding tissue in which the individual tumor cell looks so precisely like the normal cell."

A most straightforward analysis of today's microscopical method and imperfect means of interpretive diagnosis of cancer.

How different this will be when the specific cellule of cancer and cancer cytology will have become better known.

Then again these thoughts suggest themselves, just here. What form has the mater cellule from which comes the "atypical epithelial cell"? There are several forms of epithelial cells.

Atypical epithelial cells. What are they, their physical form; from where to where, how come here; they supplant normal tissues; how do they grow; what becomes of these normal tissues? Is "atypical epithelial" cells merely a traditional term; are there any physical or other similarities of the atypical epithelial cell to the true epithelium, see Figs. 2-3-60-61? What are they; is cell division of the epithelium anything like cell division of the "atypical epithelium" of the cancer? Do "atypical epithelial cells" proliferate and deposit themselves like the plus proliferation in "Rheumatism Deformans," where old and new accumulate without supplanting, to produce nodule deformities and loss of physiologic function?

Would not recognition of cancer cellules making up the specific cancer cytology, have, as seen in the lines "the tumor was made up mostly of atypical epithelial cells, with practically no tendency toward gland formation; that it was of high malignancy and that two lymph nodes simultaneously submitted, showed no evidence of metastases." Have resulted in finding all forms of the cancer cytology there and in the nodules, at least finding the transitional and small cancer cellules, very probably some cancer cellulettes and also in the nodes. See Figs. 62-63.

Again yet pardon the perseverance. Where do these atypical epithelial cells get their "high malignancy"? Has anyone even seen an epithelial cell with "any malignancy" not to speak of a high malignancy. How does it occur, come about, since there is no such inheritancy to be acquired—inherited in the epithelial cell? Then and how have the atypical cells acquired it?

When and where was it discovered that epithelial cells, reputed mater of atypical epithelial cells, amoeboid its own epithelial offspring cells to multiply and grow, a form of autivorous growth? For atypical epithelium surely include inheritancies of epithelial nature and growth characteristics! When and where? Never. Cancer destroys, utterly

deadens epithelium before she amoeboids and replaces such tissues with pure specific cancer tissues. See Figs. 60-61.

How account for the "no evidence of metastases" in those nodules if there were no cancer agent to cause inflammatory enlargement of so profuse nature as in the numerous cervical metastases; how account for their growth. In other contiguous areas surrounding these "no evidence nodules" are hundreds of possible to be aroused nodules, yet they remain passive not affected. Why? Have these no evidence nodules such a plasm that they have physiologic qualities exceptionally their own, wholly different to and from others; that they permit cancer to pass through them without other evidence than swelling?

SYNCYTIOMA

Syncytioma, tumors of the syncytium, at any period of life, pre- or post-natal.

Syncytioma are in origin, direct and indirect, also normal or benign; and abnormal, malign or cancerous.

A. The direct syncytioma are growths that spring from cellulettes, rests of the placenta as a whole, or, post labor, from adherent rests of the placenta; as simple normal placental polyp or hydatid cysts.

These are easily removed by curage. Yet when instruments are used, with their unintelligent conduct, to remove these adherent post labor particles of retained placenta, often small residuae are retained and they continue retained with subsequent clinical manifestations of danger; because of irritation of instrumental wounds, degeneration, sepsis, etc., and of cellular aberration, these simple normal retained placental or hydatid rests become cancerous; the malignant or cancerous placental polyp, hydatid cyst, syncytioma, all well known under the terms Deciduoma Malignum; Chorio-Epithelioma; Syncytioma.

B. The indirect syncytioma. These have their origin in the irregularly distributed primal embryonic cellules, or Langhan's cellules and their proliferated cellulettes, visible or invisible. As has been mentioned, these irregular distributions of the Langhan's cellules and cellulettes are due to their wanderings, Figs. 14-15-18-19-23-34-etc., and to their disseminations throughout all tissues of the body by the blood circulations, in time from the embryonic trace to the senile adult; primarily by the white blood circulation to the 5-6th week; then the red blood circulations. These included or misplaced rests are the primary embryonic cellules or syncytial Langhan's cellules, the early constructional and differentiable cellules that are spoken of as superfluous, mis-

placed and included rests. Or, these cellules not being differentiated, nor of use, superfluous, to their normal loci, as intended by growth, they are carried away in the blood stream to be disseminated and lost in the crevices of other tissues and areas, as the included embryonic cellules, Langhan's cellules; and as such "rests" included elements, if they do not atrophy, as the major part must, they remain in that included haphazard situation as latent, suspended animation elements; it is they that give origin to irregular tumors and growths in any tissue, from the invisible or visible cellulettes.

When aroused these included elements conduct as original chorionic, Langhan's cellules, creating units in their new foreign position, and thus give rise again to irregular normal or abnormal growths. It will be remembered that the Langhan's cellules of the extra-embryo are the only cellules that lend themselves to these changes. No other cellules, embryo or extra-embryo, are capable of creating these immature embryonic growths. No embryo cellules, differential or mature, have these powers or capabilities of such immature creations. Cancer is always the hyper-proliferation of the immature Langhan's cellule, aborted, so far as future differentiable qualities are concerned, in the stage of proliferation; no further differentiation whatever.

And just here where the direct, and indirect or metastatic growths of the Langhan's cellules or syncytial chorionic cellules are being discussed, belong three very interesting phases of new growths; in all three of which it is evident that the primal embryonic cellule, the Langhan's cellule, is the fundamental cellule involved in their origin and development.

These new growths are the:

1—Carcinoids,

2—The new growths occurring in the areas of the undescended testes.

3—The new growths spoken of as "Compound Teratomata, in which are found characteristically such formations as teeth, hair, skin, etc., as dermoid cysts; the causative cellule of which is sometimes thought of "as being from or of more than one individual."

But not so, they are all of one individual source.

Though I am of the opinion that all three of these types of new growths are merely Syncytiomatic, metastatic, or from included disseminated primal embryonic cellules, or Langhan's cellules and their cellulettes, yet I am sure my opinion will meet with much opposition. In

all these types, it is the strayed misdirected, included syncytial cellule that is the fundamental cellulette and cellule that factors into the new pre-cancerous growth. These new growths showing merely a transition of such disseminated included cellulettes and cellules, the so-called "rests," from the normal Langhan's cellule expression to the abnormal malignant cellule of the cancer, Figs. 1-4-65.

Personally I am grateful to the American Journal of Cancer, August, 1933, and to these authors for presenting at this time their cases of so-called Carcinoid or Argentaffine Tumors, with so clear and distinct illustrations. For they prove up the assertion of 1902; of yesterday, long before Homer's time; today and the tomorrow; there is a specific cancer cellule and that cellule is the normal Langhan's cellule, traumatized or aberrated by disease into the like appearing cellule, the cancer cellule.

For these Carcinoid, pre-cancerous cancers are the connecting links in cancerous evolution from the normal Langhan's cellule to the abnormal aberrated Langhan's cellule of cancer; both the normal Langhan's cellule and the abnormal Langhan's cellule have the same likeness.

To assist the reader in forming judgment as to causes and effects in these three types of new growths, short and in part only, citations are given here of a few of such cases presented and their history.

I—THE CARCINOIDS

Wiley D. Forbus, M.D., Argentaffine Tumors of the Appendix and Small Intestine, John Hopkins Bulletin, Vol. 37, p. 130, 1925, writes:

"Merling, 1838, reported a case of primary carcinoma of the appendix . . . . The first contribution of the subject of primary carcinoma of the appendix and small intestine, which seems of any actual value, was made by Lubarsch, 1888, who described two cases. The first showed at autopsy two small tumors located in the ileum. In the second, six small tumors were found at autopsy in the lower ileum of a man aged 52 years. Lubarsch was content to speak of these tumors as 'primary carcinoma of the ileum.' Oberndorfer in 1907 gave these tumors the name Carcinoid instead of carcinoma. Bunting, 1904, regarded these tumors as analogous to Krompecher's basal cell tumors of the skin. Burkhardt, 1909, like Bunting, regarded them to Krompecher's cancer of the skin. Krompecher, in 1919, after another study based on morphological data decided that carcinoids are analogous to the basal cell cancer of the skin . . . . One finds in the literature a multiplicity of opinion regarding the nature of and the origin of the

small carcinoid tumors which occur throughout the gastro-intestinal tract. The more important of these views are:

The tumors represent true carcinomata derived from the epithelium of the gastro-intestinal mucosa . . . .

Argentaffine Tumors occur throughout the length of the gastro-intestinal tract below the oesophagus.

Gasset and Masson regarded them as tumors of endocrine origin, hence endocrine tumors . . . .

Case 3. Clinical history: white, male, complained since two years with vague gastro-intestinal symptoms. Appendix and indurated mesentery removed. Small normal lymph gland about the approximate end of the appendix was observed and removed; none other. The tumor has extended beyond the walls of the appendix into the mesentery tract. (Suggesting cancer growth. Dr. S.) For illustration see Fig. 64.

In Carcinoid Tumors of the Gastro-Intestinal Tract. Theodore S. Raiford, M.D., Amer. Jour. of Cancer, Aug., 1933, writes . . . . Masson and others have demonstrated through intensive study, the origin of these tumors from the so-called Chromo-Argentaffine or Kultschitzky cells of the intestinal mucosa. These cells were first described by Nicholas Kultschitzky in 1897. The origin of these cells is still a mooted question, likewise their function . . . .

Microscopic Picture. A partial similarity between the carcinoids and true carcinoma has no doubt been responsible for the confusion existing as to the relation of the two tumors and the inability of older pathologists to distinguish one from the other. Nevertheless, the minor differences in structure must have been apparent to lead Lubarsch, 1888, to designate them Carcinoma; Oberndorfer to give them the name Carcinoids. The morphology of the Carcinoids is strikingly uniform whether they be benignant or malignant and regardless of their location. They are supposedly composed of cells arising from the epithelium of the mucosae, etc.

Case of Dr. T. S. Cullen; Carcinoid of tip of appendix. History of case 11, Fig. 8. Appendix, colored, female, age 41. Symptoms: indefinite pain in right lower quadrant during menstrual period and lasting several days thereafter. For illustration see Fig. 65. Signs; firm, movable mass in right lower quadrant. Operation: appendectomy. Gross picture: large appendix, bulbous tip; white, hard overly-

ing placque. Metastases none. Well . . . . Although carcinoids are commonly regarded as benign tumors . . . . malignancy is questioned.

Case of Dr. Dean Lewis, Case 28—Fig. 9; here Fig. 4. Admitted to hospital Oct. 20th, 1930. Clinical features; white, female, 46 years of age, attacks of pain, distention and diarrhoea since several years. Operation, Nov. 6th, 1930; mass in cecum was resected; patient discharged improved. Patient well, three years, has gained 35 pounds and is symptom free.

Diagnosis: Carcinoid Argentaffine tumor of the cecum with metastases to the regional mesenteric nodules.

Microscopical pathology . . . . Occasional vacuoles could be seen near bases of the cells . . . . Morphologically; it is impossible to differentiate the benign from the malignant tumors. The author is inclined to agree with Mórangos and Gaspar, considering the carcinoids as potentially malignant tumors, but whose characteristically malignancy are not apparent until late in the disease . . . .

Summary.

1. Twenty-nine cases of carcinoid tumors; six of these were malignant, metastases to region or liver.

2. The origin of carcinoids has been the subject of much controversy. It is now generally conceded that they arise from the cells of Kultschitzky. The origin and function of these cells remain a matter of speculation.

3. Occur most commonly in the appendix; in small intestine, where they form small sub-mucous or pedunculated nodules, which are usually symptomatic and are not recognized clinically. Rarely found in stomach and large intestine, they are larger and metastases occur in greater number of cases. They are clinically not unlike adeno-carcinomas, save for symptoms of less severity.

5. The prognosis is good. Only when metastases have occured is the outlook grave. Surgical intervention. For illustration see Fig. 4 here.

DISCUSSION OF THE CARCINOID-CANCER CASES, FIGS. 4-64-65

It will be recalled that in his microscopical picture Dr. Raiford mentions "that a partial similarity between the carcinoids and true carcinoma has no doubt been responsible for the confusion existing as to the relation of the two tumors and the inability of older pathologists to distinguish one from the other. Nevertheless, the minor differences

in structure must have been apparent to lead Lubarsch, 1888, to designate them Carcinoma; Oberndorfer to give them the name Carcinoids. The morphology of the Carcinoid is strikingly uniform whether they be benignant or malignant and regardless of their location. They are supposedly composed of cells arising from the epithelium of the mucosa of the intestine."

Note. Is it not true that researchers and authors, as a rule, are so imbued with the thought that cancer is in origin only in another epithelial cell and hence seek an epithelial cell in that area under question to account for such origin as here, in the mucosa. Yet it should be recalled that cancer is not mature in origin, cancer is always immature; epithelium is mature.

And here another thought. These carcinoid-cancers shown here are undoubtedly incipient cancer, and further cancer directed. It would seem that some hormone is still holding the majority back, malignant 6 out of 29 cases as statistics state. Even in the 23, subsequent history must be looked to if favorable state continues, at least it shows an unexpected favorable state of benignant evolution in the cancer cellules. For some reason the 23 do not continue malignant cancer proliferation, thus lending a favorable expression that cancer at times ceases and tends to a spontaneous cure.

Some Paradox, however true, a benignant state of cancer.

Here Figs. 4-65 the picture suggests that these carcinoid cellules are all only and pure normal Langhan's cellules; cancer directed; implying recognition of the cellule here as in every case of cancer, as the specific cancer cellule, not withstanding the dictum of pathologic opinion: "there is no specific cancer cellule." For there is here no suggestion in their cellule conduct of a further normal differentiation as there would be were there normal growth control principal still active; in such a case they would ultimately develop, because of their intrinsic potential powers of cellular differentiations, as dermoid cysts or such; giving rise to what is termed a compound teratoma, with tissues of a normal character, as hair, teeth, bone, and other structures.

But here in these pre-cancer carcinoids there is stasis in normal and stasis in a further differentiation, suggesting immediate stasis at or in the stage of proliferation, the stage in cancer evolutionary cytology just before differentiation; but intense pure proliferation continues showing aberration or disease in physiologic function of the normal Langhan's cellules; a lack of normal growth control with intense hyper-

proliferation, and as a consequence a developmental growth toward cancer; and as seen and mentioned here, such is the horizon for these cases of carcinoid-cancer. Compare Figs. 4-65 with Fig. 1.

No confusion, no inability of appreciation; as shown by the studies of Lubarsch, Bunting, Burkhardt, Krompecker and Morandos and Gaspar.

When first seeing these Carcinoid illustrations, without noting their caption: Syncytioma, pre-cancerous promptly sprang to mind. For their Figs. 8 and 9, here 65-4, illustrations of Dr. Cullen's and Dr. Lewis' cases, are reproductions in type of the pure normal Langhan's cellule, Fig. 1, only.

Throughout these cases of carcinoids and carcinoma and all other cases of cancer, even the murky melanoma, one and only one cellule image looks out of each such carcinoid and carcinoma cellule, and this is the image of the normal primal embryonic syncytial Langhan's cellule, from which the cancer cellule is descended. Attention to this feature has been mentioned throughout these works. Here in these illustrations (Figs. 8-9), here Figs. 65-4, there is suggestion only of the Langhan's cellule in image. No other cell as epithelium, connective tissue, nerve or other cell stands out as likeness.

It will be remembered the similarities could not be other; the Langhan's cellule always, in pre- or post-mature life is an immature cellule that differentiates into other maturer cellular structures; as epithelium, connective tissue and other mature cells. The epithelium or connective tissue cells are, however, mature cells, never proliferating into any other cells than themselves.

Recalling Dr. Forbus' case 3, here Fig. 64, again; upon first sight, syncytioma was suggested; for again there is here a proliferation only of the Langhan's cellule, and stasis of differentiation, only now in more mature tumorlike tissual form; likewise pre-cancerous but inclining to a more specific cancerous development. This case appeals to me in many respects so far as cellules are concerned to be quite like in appearance to my picture of a normal blood and corpuscle illustration of the white blood circulation, Fig. 41; where the blood corpuscles are all irregularly rounded multinucleolated nuclei-cellules without surrounding cytoplasm and like here Fig. 64, undergoing cellular division showing blood cellulettes Figs. 41 (1)-43. (the blood plattelettes?); in the collecting sinus of the head of the cord at the 5-6th week of human ovum growth, Fig. 41-43; where the blood corpuscles are still

syncytial, Langhan's cell in structure and appearance. Note the maple leaf formation, here Fig. 64 (5), its cellulette and vacuole feature same as in Fig. 41 (2)-4 (5).

Again note cellule similarities to the normal Langhan's cellules in Figs. 1-15, where in the villus fixation to the decidua serotina the Langhan's cellules run over from the villus into and invade the decidua serotina; note the large decidual cells Figs. 3-15 giving way to and alongside the cytoplasmless syncytial Langhan's cellule. Again note similarities to the cellules seen in the skin cancer of Fig. 60, Krompecher's skin cancer, especially in lower left corner where all types of abnormal cancer Langhan's cellules are to be seen; again compare cellules of here Figs. 65-4 (8 and 9) to those in Fig. 5 (2), the normal transitional or medium sized Langhan's cellule, from cellule division of Langhan's cellule, at 3-4th week, from blood island of human ovum; these and many other similarities caught the eye. Compare these cellules Figs. 5 (2)-65, with those seen in glioma, Figs. 57-58.

These carcinoids are all pre-cancerous conditions of Langhan's cellules and tissues, from the initial normal Langhan's cellule to that of the ultimate abnormal aberrated cancerous Langhan's cellule.

As mentioned in Figs. 64-65-4 (3, 8, 9) the carcinoids, the causative cellule here being again the primal embryonic cellule, the Langhan's cellule; no question of the epithelium of the mucosa of the intestine as causative factor; it is again a case of misplaced included Langhan's cellule reawakened to intrinsic cellular potential powers. Were the causative cellules here from the intestinal mucosa, again it would be from a mature intestinal cell. This would prove an evolutionary inconsistency, a mature cell giving rise to an immature cellule; unlike producing like. But here there is no evidence of a mature cell, as of epithelium or connective tissue cell. Here all these carcinoid cancer cellules are only nuclear in size, with multiple nucleoli but without surrounding cytoplasm, Langhan's cellules. If there were here in these carcinoid cancer cellules a surrounding cytoplasm, it would have been brought out by the stains as in Fig. 39; or in Figs. 43-45; the epithelial area of the decidua vera; the normal squamous epithelial cell in Figs. 2-3-15, fast disappearing before the amoeboid cytoplasmless cancer cellules.

THE PRE-CANCEROUS

The thought pre-cancerous promises to become a most interesting one and one given to not a little of the forensic. As shown in this

work above, there is a state of tumor growth of a normal Langhan's cellule type that can be termed, and correctly so, normal or non-malignant syncytioma, derived from normal Langhan's cellules and their cellulettes. Dr. Raiford reports in his twenty-nine cases, twenty-three non-malignant, six malignant cases. This is in a line with spontaneous cessation of cancer, however paradoxical it may seem, yet true; and in line with those cases of irregular syncytioma, Langhan's cellule tumor, giving every appearance of cancer, yet non-malignant in conduct.

Dr. H. T. Deelmann of Groningen, discusses this question in "Was Soll Man Mit Dem Begriff 'Präcarcinom' anfangen?"; Zeitschrift fur Krebsforschung, Volume 38, 1933, Page 648. As an answer, Dr. J. A. Murray replies: "My own feeling is that it would be well to drop the term altogether."

(Note—Dr. S.) Evidence shows a tumor with every index of normal Langhan's cellules; without metastases. Again that same picture is met with, with Langhan's cellule type but with metastases. One normal, the other cancer. Is this not good ground for the thought pre-cancerous. For further reflection see Dr. Deelman's original article.

CELLULE COMPARISONS

Note the structure of the pure squamous epithelial cells, Figs. 60-61, skin cancer; one nucleolus, one nucleus, surrounded by an outstanding cytoplasm; altogether a perfect normal epithelial cell. Now compare this picture with the Langhan's cellule, Fig. 1, and the cancer cellule; Figs. 1-4-8-9-65-etc., the latter multi-nucleolated, the whole cellule the size of the nucleus of the epithelial cell, but without surrounding cytoplasm. Were there a cytoplasm the stain would bring it out. Some authors endeavor to sketch in a limiting cytoplasm, as though one existed. On the whole an entirely different figure from the pure epithelial cell type seen in these skin cancer cases. Yet pathologic opinion still clings to her dictum, that cancer is "atypical epithelial proliferation." Yet if called upon for such an example of pure epithelial proliferation, showing so prolific a proliferation as in the cancer, to justify such a judgment; and still denying that there is a typical specific cancer cellule; how would pathological opinion affirm such judgment without any pictorial ideal of such a cancer cellule; such a privilege indeed to show such an atypical epithelial proliferation, on her part, would be decidedly very embarrassing to her; it has never been done for the simple reason, Langhan's cellule is not epithelial.

Again Fig. 2 shows a small arear of the decidua vera at 5-6th week of human ovum development. Note the large sized epithelial cells in this area, one nucleolus, one nucleus and surrounding cytoplasm. The next Fig. 3, is three of these individual decidual epithelial cells, oil enlarged; again the same development, one nucleolus, one nucleus and cytoplasm. Compare these cuts with Fig. 60, the normal squamous epithelial cell area in a skin cancer, Fig. 61, being rapidly amoeboided by the invading cancer cellules — again the same epithelial picture.

But regard now the normal Langhan's cellule, Fig. 1, of nucleus size only; multinucleolated; without surrounding cytoplasm; how like the carcinoids here; the cancer cellule throughout is same in size and structure though not in function. Examine syncytia of all illustrations for the normal; note outstanding similars. Regard and search all cancers here shown and the likeness and similarity between the normal, and the abnormal cancer cellules; their similarity is outstanding.

Finally it must be admitted that the normal Langhan's cellule, the carcinoid-cancer cellule, and the cancer cellule, are one and the same in type, all have the same origin and appearance externally; a nucleus cellule in size; multinucleolated and without characteristic surrounding cytoplasm. Internally they differ in physiologic function; the cancer Langhan's cellule showing loss of growth control hormone and loss of superior finesse from the normal Langhan's cellule in type in physical structure; this is easily to be explained as all her cellule energies are expended now in her cancerous condition upon fierce rapid hyper-proliferation; amoeboid digestion of their environmental contact cells and tissues; causing great enervating pain from this rapid amoeboid proliferation of cancer cellules; sepsis from loss of physiologic resistance and general disintegration of host and cell.

Just here considerable stress is laid upon the fact that the Langhan's cellule, normal or cancerous, is without surrounding cytoplasm, for I have always maintained that that is one of the distinguishing features showing that the Langhan's cellule is not epithelial in nature. This has been explained before. One glance at Figs. 2-3 the decidual epithelial cell compared with Figs. 1 and 4, the Langhan's cellules, is sufficient to prove that the Langhan's cellule is not epithelial. Likewise the empty space from which a syncytial nucleus cellule has just departed to enter the blood vessel, Fig. 34. Regard again the very large cellules in Figs. 65-4 (Figs. 8 and 9) and compare with the large round cellules in Fig. 1, (magnification here slightly smaller than in cases Figs. 8 and 9).

To repeat before leaving this subject of comparisons. These carcinoid cellules, Figs 65-4 here (Figs. 8 and 9), are all nuclei-cellules only, cytoplasmless and multinucleolated; the latter feature accounting for their rapid proliferation. They are not cell in nature, that is histologically, only nuclear-cellule; Langhan's cellule. Regard Fig. 61, Krompecher skin carcinoma. Note the cell structure at (1) and the nucleus at (1) below.

II—NEW GROWTHS OCCURRING IN THE AREAS OF UNDESCENDED TESTES

A. P. Vastola, M.D. in Embryonal Carcinoma of Abdominal Testes in a Pseudo hermaphrodite, Jour. Amer. Med. Assoc., July 8, Page 111, 1933, mentions such a tumor operated upon in emergency conditions:

"When the peritoneum was incised there was an immediate and uncontrollable gush of blood, which poured from all parts of the abdominal cavity. An exploration of the pelvis disclosed a tear about four inches long in the posterior surface of a pelvic tumor, 12 x 10 c.m., the pedicle of which was attached to the peritoneum in front of the right iliac vessels and had undergone torsion. Fortunately a part of the omentum had forced itself into the rent and so, acting as a plug, had partially controlled the bleeding . . . . Illustration (4); Embryonal Carcinoma of Testis, reduced from a photomicrograph with a magnification of 125 diameters.

Microscopical examination: Sections showed a diffusively growing large round and polyhedral cell carcinoma. The tissue was very soft and the stroma delicate and infiltrated with lymphocytes in many places; thought this a rather typical teratoid cancer and of teratoid origin, not derived from adult tubule cells, as tumors that may possibly originate from tubule cells and may be called seminoma generally are more alveolar in structure and lack lymphoid stroma. Yet he stated that he would not insist too strongly on the exact derivation of this particular tumor, which impressed him as an "embryonal tumor."

Discussion. (Dr. S.) It is easy to agree with the finding "which impressed him as an embryonal growth." For among embryo and extra-embryo cellules there is only one cellule that could conduct fundamentally as the cells of this tumor have, the extra-embryo immature primal embryonic cellule, the syncytial Langhan's cellule, for the illustration is characteristic of a Langhan's cell syncytioma, here spoken of

as a carcinomatous growth; as a rule these growths are soft and hemorrhagic.

Feeling that the Langhan's cellule here is the fundamental cellule in origin and development, would not this growth expression come under the head of "an indirect syncytioma" originating from irregularly disseminated Langhan's cellules; becoming included; reawakened to development such as outlined above. Hence diagnosis; Syncytioma, indirect, at first normal in expression, future open; removal seems followed by recovery; operation October 2nd, discharged November 2nd; at operation there was no time because of extreme danger for pelvic examination for metastases. So this case as it seems to this writer (Dr. S.), is a case of indirect syncytioma of Langhan's cellules, embryonic, extra-embryo derivation.

NEW GROWTHS OCCURING IN OTHER AREAS BUT ATTRIBUTED TO THE GENITAL COMPLEX

December, 1933, I have been fortunate, in scanning the American Journal of Cancer, Sept., 1933, page 22, to meet a most interesting article: "Extra-Genital Chorio-Epithelioma in the Male," by Dr. H. Gordon Heany, Dept. of Path., University of Chicago.

The author gives as origin, page 23, "Theory of Origin of Chorio-Epithelioma is Totipotential Cells," and his association of the theory with the genital area would suggest a close unity of origin therein. He mentions eight cases, giving their necropsy findings. In each case his reports show no changes in the testicles. Why origin should lie in the genital region is open to question. Maybe the thought is that these totipotential cells, speculative thought and term only yet a term full of meaning, have rule in the genital complex and are capable of constructive effort in other areas. This again suggests maturity; but maturity never originates cancer.

On the other hand, long before, comparatively speaking, the gonoids or the genital areas are developed and become active, the Langhan's cellules are functioning, in fact, the genital areas depend upon the Langhan's cellule for growth, and are primary to the gonoids and genital complex. See Peter's ovum, Fig. 13. The Langhan's cellules are easily recognized and are very well known and that they and their celluletts are disseminated throughout all the tissues of the body, in both pre- and post-natal life. Their normal beginning is known; when aberrated in function they are recognized as the cancer cellules, in which cancer cellules, one and only one semblance is outstanding, and

that is the likeness of the normal primal extra-embryo nucleus-cellule, namely the Langhan's cellule.

Totipotential cells credited with chorio-epithelioma in origin; is that not excessive?

These growths cited here, developed away from the genital regions. They all showed Langhan's cell and syncytium structure in their findings. Hence these cases spoken of here as "Extra-Genital chorio-epithelioma in the male" are they not simply and solely Syncytioma, indirect, viz., syncytioma originating from included, suspended animation, disseminated Langhan's cellules or their cellulettes; awakened they began a normal career soon becoming cancerous; in origin, having no connection with the genital complex.

Short necropsy citations only of these eight cases are as follows:

"Page 23; Theory of Origin of chorio-epithelioma is totipotential cells.

Case 1: Dermoid cyst into anterior mediastinum; attached to wall was a malignant tumor; both lungs riddled with metastases, liver and spleen. No abnormality in testes.

Case 2: In the mid-line, abdomen, was a mass tumor ill defined, metastases to liver, none other; testicles normal.

Case 3: To the left of the bifurcation of the aorta was a large retroperitoneal mass; metastases in liver and lung; no abnormalities in the testes.

Case 4: Immediately behind the liver was a large mass enclosed in a fibrous capsule; testes normal.

Case 5: A large mass at the hilus of the left lung; no changes in testes.

Case 6: Tumor of the anterior mediastinum containing chorio-epithelioma elements; testes nil.

Case 7: Mass as large as a cocoanut, in upper part of mediastinum, typical dermoid cyst with areas of chorio-epithelioma; multiple metastases, no record of testes.

Case 8: A large retroperitoneal tumor pushing forward the stomach and pancreas; a piece of tissue determined, Polymorphic-cell Sarcoma. Anatomical diagnosis was as follows: Primary Retroperitoneal Chorio-epithelioma, probably derived from the uro-genital anlange; metastases to the lungs; atrophy of the right testicle. Generative organs; the prostate, seminal vesicles, epididymis and left testicle are normal. The

right testicle is half the normal size, but shows no tumor growth nor other abnormality; (traumatism?)

Page 29. Explanation "of assigning the origin to the uro-genital anlage appears to be the most satisfactory explanation in this case."

Discussion. (Dr. S.)

Is not chorio-epithelioma an excessive term. The syncytium does not include or embrace the whole of the chorion, see Figs. 18-25-29-45-etc.; the stromal entities of the chorion and villi are not involved in the chorio-epithelioma or the syncytioma. And here is even a greater question. Is the Langhan's cellule an epithelial cell? It is maintained that the Langhan's cellule is not an epithelial cell! See Figs. 1-4-2-3-60-61. Hence epithelioma would be error?

Midst the high temperatured forensics of circa 1902, it was written concerning this subject:

"Syncytioma, Fig. 8, is the most correct term at the present time descriptive of this neoplasm. Syncytioma refers to that particular structure only of the chorion or villus, and which possesses the wandering, invading, destructive, and amoeboid qualities characteristic of the syncytium and its nuclei. Further, the term suggests a new growth, consisting of a dense protoplasm (syncytium) and nuclei (Langhan's cells). Again, as will be shown, the syncytium always leads in sprouting process of the chorion or villi, the nuclei follow in, this sprouting naturally preceding the wandering out, or the possibility of metastatic formation of the free nuclei. As I show below, even the free ectoblasts (nuclear division) are invested by syncytium before they leave the mater syncytium. This term naturally, and correctly so, excludes the thought of blood vessels and other higher structures. Chorio-epithelioma, far more correct than deciduoma malignant, suggests a higher order of histologic merit than is present in the neoplasm. Deciduoma malignum is manifestly incorrect, for neither the decidua nor its cells give origin to the new growth. "Original paper read before the Chicago Gynecological Society, June, 1902."

Addenda, March 26, 1934.

While the above lines are going through the press, two other cases, also fresh from the press, are reported and appear to me to belong to this syncytioma class as described above.

The first case is that of Anatole Kolodny, M.D. of Sioux City, Iowa, "Tumor of an external supra-renal rest," in a mother of a grown son; Journal of American Medical Association, March 24, 1934, Page 925.

My attention was drawn to this case without my noticing the caption, because of the microscopical illustration being so similar to the divisions of the Langhan's cancer cellules; though Dr. Kolodny speaks of his case as from a supra-renal rest of fascicular origin. In history, site, formation of the tumor, metastases following an apparent operative improvement; great similarity to the Langhan's cancer cellules in his microscopical illustration and death from metastases two years post operation; gives history of the usual syncytioma. Supra-Renal is mature; cancer is always immature.

The second case is reported by Dr. L. A. Trowell Jr., of Lincolnton, North Carolina, from same journal and of same date. As the Journal of Amer. Med. Assoc. is easy of access throughout the world synopsis of the case is hardly necessary. The Doctor's diagnosis and description is splendidly illuminative: "A textile foreman always well and rugged enters hospital July 4, 1933; is clear history of a well defined case of carcinoma of the lung in a twenty-three year old man. After several aspirations, death after August 1st."

Our interest here is in the diagnosis, carcinoma, derived from the "epithelium lining the bronchus." (Just here may I state that several times I may have taken the liberty to appear to disagree with reporters of these cases; this is done only in the spirit of the best of good natured interest and discussion as to the origin of the pathologic cellule cause.)

Again here is the statement that an areal environment epithelial cell is the originating cause; implying epithelial influence, transmutation, etc.; yet cancer is not mature in origin, cancer is always immature, hence not epithelial; cancer cellule and tissue bear no relationship to epithelium. Again here the fundamental cause was the abnormal Langhan's cellule. And this case again might be termed bronchial or pulmonary carcinoma or syncytioma.

Again too here, "Is it not true that researchers and authors, as a rule, are imbued with the thought that cancer is in origin only in another cell and hence seek, as here, an areal epithelial source."

III — THE NEW GROWTHS SPOKEN OF AS TERATOMATA, COMPOSITE TUMORS

"In the last pages there has been given a description of the hydatiform mole and of the chorionic epithelioma, which may develop in

connection with pregnancy, and it was pointed out that these are tumors of a more suggestively parasitic nature than the others which have been considered in previous chapters, since they are composed of the tissues of a different individual. This is not enough to shake our faith in the belief that the ordinary tumors are composed of the tissue of the same individual, but at least it causes us to reflect upon this question.

The insistence of tumors morphologically identical with the chorionic epithelioma of women, but growing in the testicle of men, is especially calculated to arouse our interest in the question.

These tissues belong to the composite type called teratomata, which contain tissues of many sorts, representing all of the three germinal layers, and give rise to metastases which are composed of Langhan's Cellules and syncytium. . . . . (MacCallum, P. 1089)."

Discussion. (Dr. S.) The causative cellules here are all of one sort and of the same individual source; the individual's own syncytial cellules and from the early times of his own ovum state, while the Langhan's Cellules are still in the differentiable state of being developed into other further mature elements or cellules; no question of a double individual origin; nor is it a question of parthenogenesis. For these tumors referred to here, are all formative evolutions of a reawakened included misplaced Langhan's Cellule or their cellulettes, and as unequivocally stated in the last lines of this text book description: "These tissues . . . . contain tissues of many sorts (hair, teeth, etc.) . . . . and give rise to metastases which are composed of Langhan's Cellules and syncytium. (MacC.)" Due to Langhan's cellulettes wandering, becoming included, dormant and being aroused to potential activities; perfect or imperfect.

Nor are these tumors Teratomatous, that is of or from a second ovum, growing into, included in or springing from another ovum; a so-called monstrous foetus. There is no question of a double origin as a source of causative cellules here; there is but one cellule involved here and that is the primal embryonic syncytial cellule, the Langhan's Cellule; the only primal evolutionary constructive cellule that is differentiable into further maturer elements or cells. No other cellule possesses these fundamental and functional attributes.

A prophecy, 1928.

"No doubt in time we shall have a morphological criterion by which we may say definitely that an isolated cell is a cancer cell or a normal cell, but at the present time, 1928, no such criterion exists and we rely upon the arrangement of the cells and their relations in their growth, to the surrounding tissue in which the individual tumor cell looks so precisely like the normal cell." (MacCallum.)

Today, happily fulfilled! 1934.

Illustrations

of

Normal Cellules and Tissues;

of

Abnormal Cellule (Cancer) Tissue.

Throughout these early illustrations, 2-8th week, note that the Langhan's Cellule is paramount in importance of cellular expression.

Some Normal and Cancer Cytology

The Langhan's Cellule

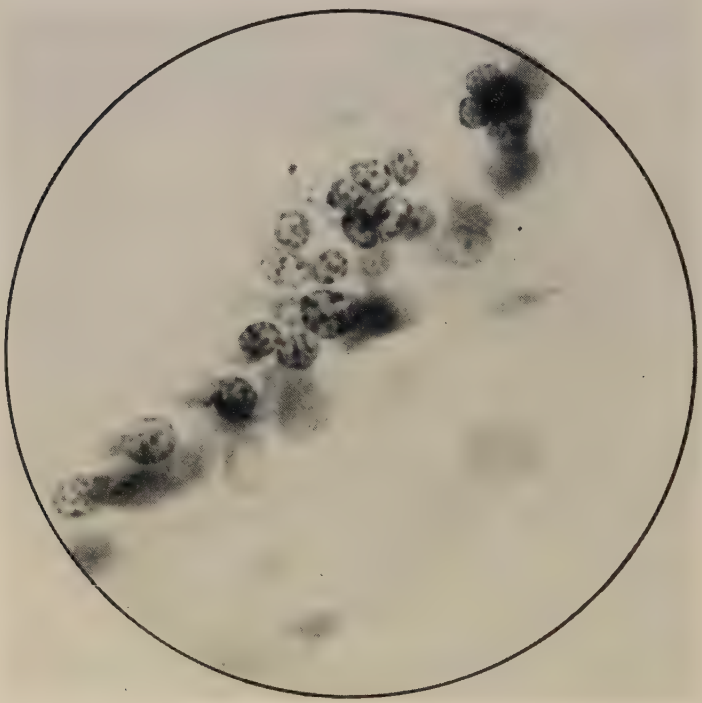


Figure I

Fig. 1. The multinucleolated nucleus-cellule of the syncytium. An irregular embryonic nucleus-cellule only, without surrounding self limited cytoplasm as in a regular cell, like an epithelium or in an erythroblast blood cell. This is the type of first uncolored multinucleolated nucleus-blood-corpuscle; unhematinized; hence the term: Primary uncolored white blood circulation, where this uncolored, multinucleolated nucleus-blood-corpuscle is predominant in the blood stream; the white blood circulation continuing until about 5th-6th week. From Origin of Blood (Stahl).

The specific cancer cellule is the normal Langhan's cellule of the primal and subsequent syncytium, aberrated in physiologic function through disease or traumatism. However bold this statement may seem over against so solid assertion to the contrary on the part of histology and pathology, that "there is no specific cancer cellule today, 1934," the Langhan's cellule aberrated is the specific cancer cellule, and brazenly stares out of every case of cancer, as such. There is no change in form or appearance in the two cellules, the normal Langhan's cellule and the abnormal cancer cellule, with the exception that the cancer cellule in structure seems a little coarser in texture. The Langhan's cellule is in direct descent from the corona radiata cellules of the ripe ovule; compare Langhan's cellules with corona radiata cellules; Figs. 10-11-1.

The Langhan's cellule is of nucleus size only, multinucleolated and without a characteristic cell surrounding cytoplasm. Some authors endeavor to sketch in cell cytoplasm outlines in their illustrations of cancer, to suggest cell outlines, but even these suggested outlines are very few in number. An epithelial cell needs no suggested sketched in cell outline, it is there in positive plastic outline; compare Langhan's cellule with Decidual Cell and Carcinoid Cellules. Figs. 1-2-3-4. The term "nucleus cellule" was hit upon for these syncytial cellules in these syncytial interpretations, as it seemed more correct and fitting to their physical and functional conduct. It is cellule in that it is far smaller than the usual technical cell, as an epithelial cell. The diameters of the primal nucleus cellules, Langhan's cellules, vary between 3:5-4 m.; that of the red erythroblast between 7:5 to 17.5 m. Interesting to note is that the diameter (1) of the nucleus-cellules, Langhan's cellules, as a whole; (2) the nucleus, sole, of the erythroblast; (3) and the diameters of the mature neonat erythrocytes, are about the same, 3.5 m. to 4 m. in diameter at 2-3-4-6-7-8th week, of human ovum growth.

In 1902 it was asserted that the Langhan's cellule is not epithelial hence cancer is not epithelial. Notwithstanding wide literature survey and close histologic study of syncytia and Langhan's cellule expressions, both normal, and abnormal cancer; I still maintain that Langhan's cellule is not epithelial. In searching among the most assertive to the contrary, where is the histologist or pathologist who shows such an offspring as "the atypical epithelial cancer cellule" among the divisions, offspring, of the epithelium, that it be so easily recognized as the atypical offspring? in both proliferation and structure; none!

What physical formation, histologic, has the ordinary or the special writer in mind when he uses the term cancer? The nucleus cellule, the primal matrix cellule, the Langhan's cellule, conducts as a separate cell unit, sui generis, though much smaller than a complete mature cell like the epithelial cell; the Langhan's cellule is multinucleoated, giving offspring to many cellulettes, neocellules; it wanders into blood spaces and vessels and into the stroma of the early chorion and villi; the Langhan's cellules or primal nucleus-cellules wander from original position in the syncytium into blood spaces and vessels to form the first blood corpuscles, the primal multinucleolated uncolored white blood corpuscles of the primal white blood circulation of the embryo, to the 5-6th week of growth; uncolored since the corpuscles do not as yet contain hematin; Figs. 18-20, 2-3rd week, 34-39-41-43-etc.

Then again "the atypical epithelial cancer cell" seems so easy of expression, as though the writer of the term has a certain definite conception of form of the cell in mind. But as a rule he strenuously denies there is such a cell or cellule, as "the specific cancer cellule"! Rather some inconsistency.

Divisions of the normal Langhan's cellules and the cancer cellules are the same in number, seven; all irregularly rounded in form; they are:

(1) The small round cellulette.
(2) The small round cellule.
(3) Medium or transitional round cellule.
(4) The large round cellule.
(5) The spindle shaped cellule.
(6) The long link cluster.
(7) The kidney shaped cluster. See chart later.

Explanation for the difference in appearance of the Langhan's cellules in Fig. 1 and that in Fig. 45. In Fig. 1 the stain was more sparingly exhibited to bring out the better the detail of the technical structure of the intrinsics of the cellule, emphasizing the better the multinucleolated and other delicate structural features of the cellules.

In Fig. 45 the syncytium and Langhan's cellules are shown as they are most generally shown, where the stains are more freely taken up and where outline in general is better shown but at the expense of internal detail.

THE DECIDUAL EPITHELIAL CELL GROUP

Note the structure and appearance of the epithelial cell in the decidua vera area and their individual forms.

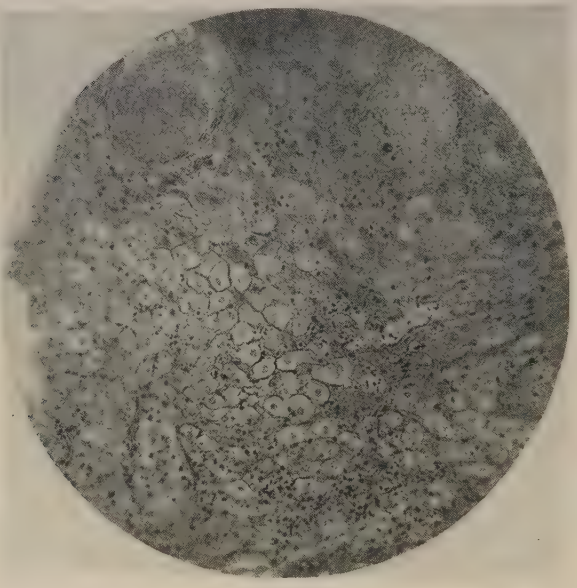


FIGURE 2

FIG. 2. A small area from the decidua vera of about the 5th week. Large irregularly rounded, polyhedral epithelial cells. No question of their being technical cells; one nucleolus, one nucleus, surrounded by a distinct regular limiting cytoplasm. Compare this illustration with that of the smaller matrix embryonic cellule of the syncytium, the Langhan's cellule, with its multinucleoli and without surrounding cytoplasm; Fig. 1. How much larger the epithelial cells. See Figs. 60 and 61.

INDIVIDUAL DECIDUAL EPITHELIAL CELLS

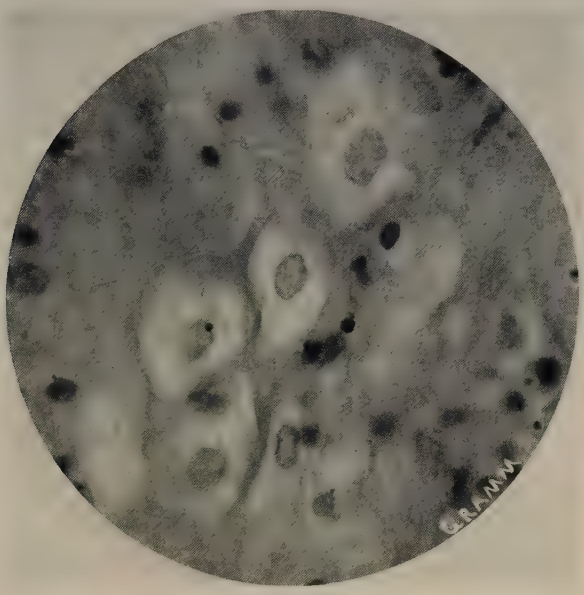


FIGURE 3

FIG. 3. Individual Decidual Epithelium. No resemblance in theory or fact to the normal Langhan's cellule, Fig. 1.

The illustration speaks for itself, like all epithelial cells there is one nucleolus, one nucleus and surrounding limiting cytoplasm. Compare this and just previous illustration, Fig. 2, with epithelial cells in Figs. 14 and 15, Villus attachment to Decidua Serotina at 7-8th week. Similarities of epithelial cells very clear and marked. Compare with multinucleolated invading Langhan's cellules, without surrounding cytoplasm. Compare also with epithelial cells in Figs. 60-61, Lip Cancer. Large squamous epithelial cells disappearing like the decidual cells in Figs. 14 and 15, before the small amoeboiding Langhan's cancer cellules. In Figs. 60 and 61 Lip Cancer note again and throughout, the small cancer cellules compared to the large epithelial cells. In Figs. 3-15-61, the great differences in size of nucleus and cell is more apparent, than in the Langhan's cell nucleus alone without surrounding cytoplasm.

THE CARCINOID-CANCER CELLULES

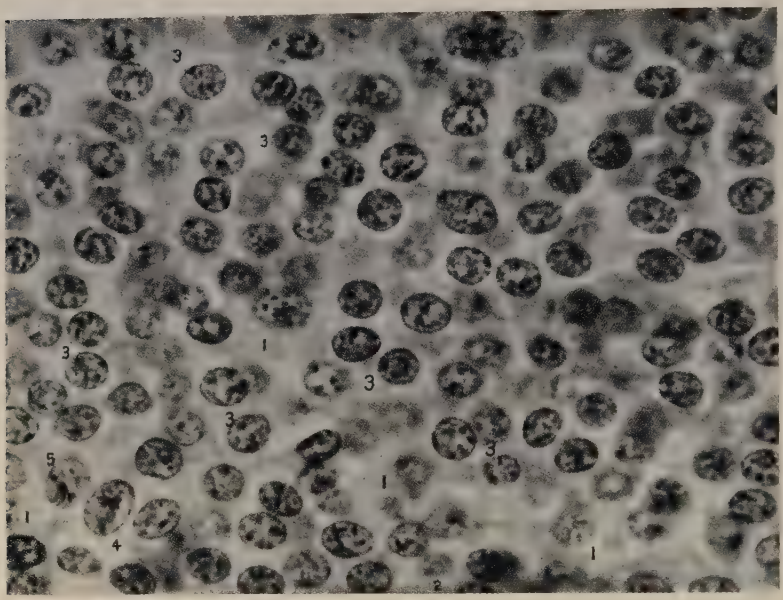


FIGURE 4

FIG. 4. ("Fig. 9, Path. No. 48429, Case 28). Oil-Immersion Photomicrograph of a Metastatic Nodule from the Carcinoid of the Ascending Colon. The cells are almost identical with those of the preceding photograph, Fig. 65, in nuclear shape and size and in cytoplasm granulation. The essential difference is the lack of cell definition."

The carcinoid-cancer cellules, the connecting link cellules, between the normal Langhan's cellules and the abnormal Langhan's cancer cellules.

From Dr. Dean Lewis' case of Carcinoid of the Ascending Colon.

Quite a difference in area picture between the Langhan's cellules and the carcinoid-cancer cellules and those of the large epithelial decidual cell picture, Fig. 2 and the single epithelial picture, of the decidua vera at 5-6th week, Fig. 3. Here the carcinoid-cancer cellule, Fig. 4, is true to its mater normal Langhan's cell ancestor; size of a nucleus only, multinucleolated and without surrounding cytoplasm; true to the assertion that the Langhan's cellule, is sui generis, of separate distinct nature and kind, but not epithelial, Fig. 4. Were there here in the carcinoids a surrounding cytoplasm, the stain would have brought out the distinction, see Figs. 39-43-44-45. In this respect, note carefully all cancers; same in expression. In the next illustration, Fig. 5, normal Langhan's cellule division at 3-4th week. At (1) is the large round normal cellule; (2) is the medium sized cellule, the prototype of the medium or transitional form of cellule of the cancer cytology. How similar these carcinoid-cancer, Fig. 4, types are and true to their mater ancestor at the 3-4th week Fig. 5 (2) of human ovum growth! Again see perfect type of these cancer cellules in a glioma, Figs. 57 and 58.

Naturally here in the glioma, the small cancer cellule and the larger round spinal cancer cellule are also to be seen.

Types of the carcinoid-cancer cellules shown here, Fig. 4.

(1) Cellulettes, but very faint, in reproduction some outlines have been lost; but a continued view helps to bring out cellulette outlines. Again see Fig. 8 (1); normal type see Fig. 5 (5), 45 (2), 49.

(2) Small round cancer cellule.

(3) Medium or transitional cancer cellule, majority seem medium or transitional cancer cellules. Note (3) in center the cellulettes seem right on border of cellule, ready to drop out as cellulettes or be normally extruded. Normal type, see Fig. 5 (2); for abnormal or cancer type among many see Figs. 57-58, a case of Glioma.

(4) Large round spinal type of cancer cellule; others in Fig. 8 (4) and 65. Normal type see Figs. 1 and 5 (3).

(5) A round spinal cellule, here with distinct vacuole and cellulette formation. Common throughout cancers. Size nuclei-cellules only. No characteristic surrounding cytoplasm as in epithelial cells; see Fig. 2 and 3, 60 and 61, for comparisons.

For cellulette expression in melanoma, see Boyd, Fig. 78, P. 222.

NORMAL LANGHAN'S CELLULE DIVISION
AT 3-4TH WEEK, IN BLOOD ISLAND

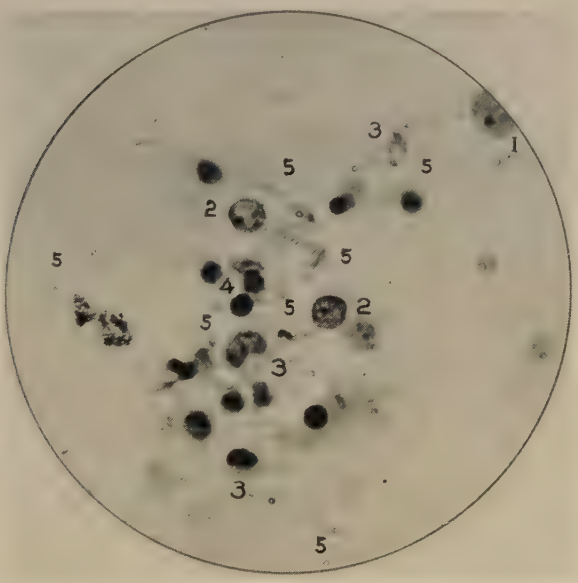


FIGURE 5

FIG. 5. Normal division, 3-4th week human ovum. Observe particularly the cellulettes, the pre-small round cell forms. All these types seen in cancer.

Normal divisions, 3-4th week; the normal cellulette (nucleolus), the forerunner of the infant small round cellule, the prototype of the small round cellule of the cancer cytology, Figs. 4-8-9. Other types of differentiation, division and multiplication, are seen in a blood island just below the free margin of the chorion in the chorionic cavity. Figs. 29 (3).

(1) Large round multinucleolated form, shadow and light suggesting cleavage or separation of several infant cellulettes.

(2) The medium normal cellule, prototype of the numerous medium or transitional type of cancer cellules. Figs. 4 (3)-8-58-65 (3).

(3) Kidney-shaped cluster; adherent cellulettes (nucleoli) suggesting multiple division and escape of cellulettes, two remaining behind closely approximated.

(4) Small round cellules, prototype of small round cancer cellules.

(5) The cellulette now numbered and plainly seen; others more faintly seen here; the sub or pre-small round cellule type of division of the large round spinal cellule type of multinuclolated nucleus-cellule, Fig. 4 (1) etc; vacuolated condition of cellule, pre-division, seen very plainly in cellules in Fig. 48 and in others. All types of above cellules are common in cancer and sarcoma. Cellulette formation very plain in Figs. 4-65.

Interesting Very Early Primal Division in Cytology of Normal and Cancer Expression. The Matrix and Blood Cellulettes. Analogues in Cancer.

Throughout this field, Fig. 5, there is seen many diminutive very small circular cellulettes, 5 (5), in most cases outlined as only a ringlet, with clear transparent contents; this is a very small cellulette. In some cellulettes there is a pin point darker spot within the ring suggesting a nucleolus or cellulette already at this diminutive period. These must be the sub-small form of the small cellule of a normal small cellule division. Use good hand glass again to obtain good detail.

Normal Division Continued; 3-4th Week

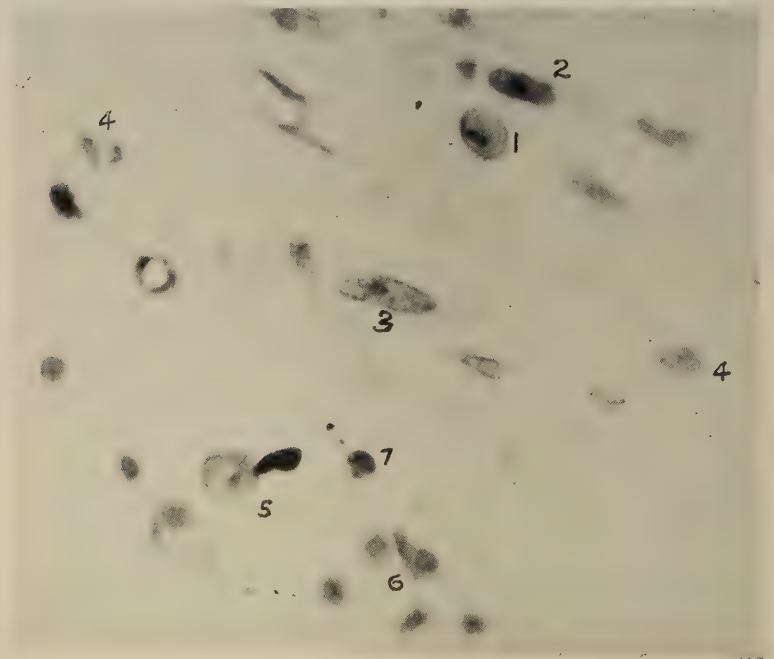


Figure 6

In a few cases, though quite faintly seen, these cellulettes are arranged in link-chain cluster form, the earlier form of the later well seen link-chain cluster as seen in Figs. 4 (1) (5)-7 (3) above, and 41 (1). These clusters are

faintly seen here, about (3) in the center of Fig. 5 and S.E. of (3) below (5); also in other areas of the field; for clusters in cancer see Figs. 8-9-55-58.

In fresh specimen these cellulettes are easily to be seen; in older specimen not so easily, their substance seems frail and to disintegrate and disappear with time. Many other normal cellulettes may be found in the cellular divisions seen in the stroma of villi and chorion, 2-8th week, some easily seen, others less readily seen. Figs. 7-9-41-43, 45 (2), 49.

The importance of these findings lie, among others, in the fact that in cancer these cellulette expressions are commonly and more easily to be seen. See Figs. 4-8-9-etc. In many illustrations, both normal and cancer, these cellulettes are not very clear; they are too primal and faint in color always to appear in the field of microscopical vision, their plasm seemingly so primal they do not take the stain so readily and retain it. At first sight these cellulette formations were thought Artifacts. For cellulette expression even in the murky melanoma, see Boyd, Fig. 78, page 222.

Fig. 6. To show division in normal cellules in the contiguous margins of the stroma of the chorion and area vasculosa in chorionic cavity. These types seen in cancers.

(1 and 5) show large round cellules, uncut; (2 and 3) elongated spindle cellules; (7) small round triangular cluster form, (3) still clinging together; same form of cluster may be seen in blood cellulette expression, Fig. 4 (1) These types are all common in cancer, see Figs. 8, 9 and other cancers. For (3) at 3-4th week see reproduction in cancer, Lip Cancer, Senile, 70 years of age; see Figs. 36-37 in supplement.

Normal Divisions Continued

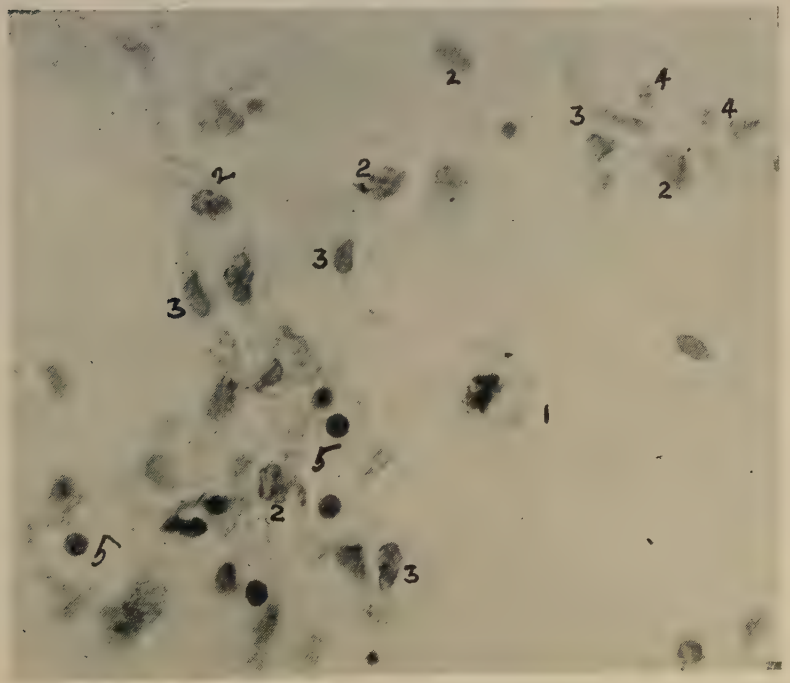


Figure 7

Fig. 7. Shows division of normal embryonic cellules, at 5-6th week, in chorion, extra-uterine human ovum. Mitosis and amitosis division. Outstanding is (3) above, the elongated narrow link-chain cluster. All these types of cellules seen in cancer. Mitosis (1), Karyokinesis or Indirect Cell Division. (3) below, Amitosis or Direct Cell Division.

Normal cell division, in the chorion, extra-uterine at 5-6th week; (1) Karyokinetic figure, mitosis, indirect division; (2) large round cell; (3) below, elongated spindle cell; apparently here amitosis or direct division; both forms seen repeatedly in the normal, also in the cancer. (3) above, the long narrow band link-chain cluster of clinging infant cellules; see also Fig. 5 (5) for the normal. In the cancer see Fig. 8 (7) in a syncytioma, Fig. 8 (2) cluster in a cellule; Fig. 58, in a glioma; Fig. 55, in a neuroblastoma; see also Fig. 9.

Pure Cancer Cytology

Syncytioma

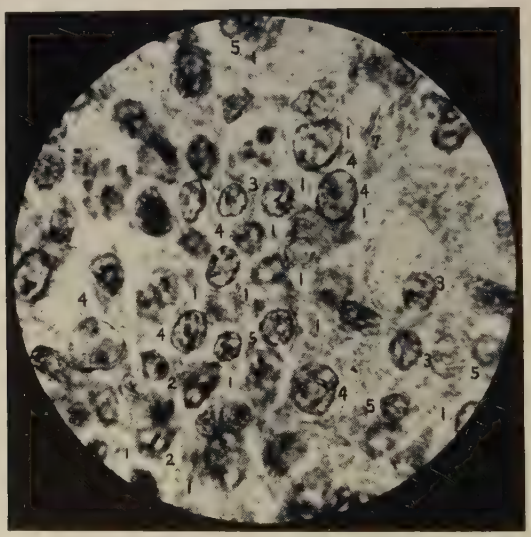


Figure 8

Fig. 8. Pulmonary metastasis of uterine syncytioma. Note all forms of the cancer cellule. The spindle type missing. Note in cellules, (2) to the left below, near the center, beaded cluster of cellulettes seen in the cellules before division. Cytology seen here.

(1) Cancer, cellulettes, almost indistinct, so small, must use good hand glass. Others in field must search for them. These cellulettes are not easy to find; it is no great stretch of reason to feel that many such cellulettes exist, though they are too small and indistinct for easy recognition.

(2) Two large round spinal cellules in both of which the cellulettes appear as beaded diameters; the lower one showing cellulettes in separate beaded form. Alongside the upper one, at (1), is a free cellulette; cellulette vacuoles observed in many of the cellules are seen in many cellules throughout specimen.

(3) Medium or transitional cancer cellule, likewise marked with intracellular cellulettes. Note cellulettes touching circumferences.

(4) The large round cancer cellules quite full of cellulettes, especially gathered about their circumferences. There is analogous conduct of the cellulettes in the normal divisions, only not so plainly to be seen. See Fig. 1.

(5) Small ripening cellules full of vacuoles and cellulette suggestions.

(6) On the upper margin of illustration a small cancer cellule.

(7) An elongated cellulette cluster, faintly discernible. See Fig. 5 for the normal.

(8) See Fig. 9 for similar material in substance for long intimate study and findings.

PURE CANCER CYTOLOGY IN A CASE REPORTED AS UNDIFFERENTIATED ROUND CELL SARCOMA
ANALYSIS OF THE CYTOLOGY IN FIG. 9.

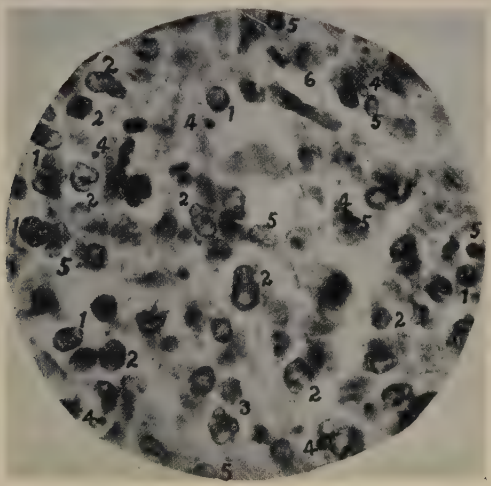


FIGURE 9

FIG. 9. (The large round embryonic cellule both normal and cancer, in the process or stage of its disintegration or breaking up, releases its plural cellulettes, singly and in clusters).

(1) In Fig. 9 the large round (1) cellule; in its final dividing seems to dissolve in its fluid environment much like a cube of sugar would, in particles; thus these triangular (3) and other clusters (2) cellulettes, would remain for a moment or two still clinging together, soon to separate and go on to the small (4) neo-round cellule stage.

(2) The cancer cellulettes. In cellule one it is readily seen as disintegration of the main large cellule (2) occurs; that several cellulettes may still cling together in cluster form, at times.

(3) In triangular cluster (3) form; for the normal see Fig. 6 (7) 3rd to 4th week, in blood island; Fig. 41 (1) in blood sinus at head of cord, 5-6th week. Cellulette formation is also readily seen in other large cancer cellules (1) (2) (3) here, about to break up.

(4) The small round cancer cellule form, successor to the cellulette. For normal see Fig. 5 (3) (4).

(5) The medium or transitional cancer cellule, see Figs. 4-57-58 in a glioma, there all other cancer cellules well and clearly seen; for normal type see Fig. 5 (2).

(6) The long narrow link-chain cluster of cancer cellulettes and small round cells; others see in Fig. 58, a glioma; Fig. 55, in a neuroblastoma; for the normal type see Fig. 5 (5), also Fig. 7 (3) above.

(7) The spindle cell form, missing here, though so common in cancer.

(8) All pure cancer cytology.

This plate made from illustration from Dr. Dallas E. Phemister. Undifferentiated Round Cell Sarcoma, Annual of Surgery, 1931.

Some Normal Early Embryologic Illustrations in Which the Early Matrix Embryonic Cellules, the Langhan's Cellules Play the Fundamental Part.

The Ovule, Human, Enlarged

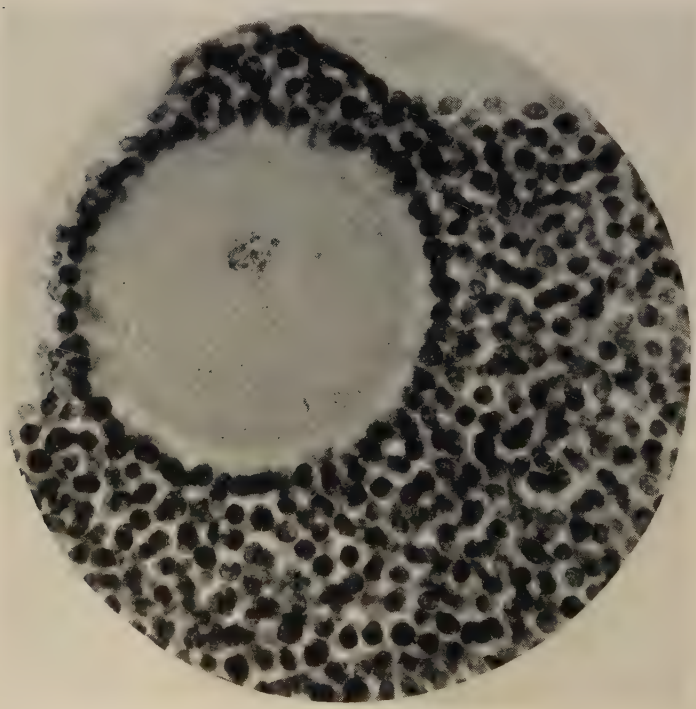


Figure 10

Fig. 10. All features of relativity of structures beautifully shown; but here would suggest again, control all structures with good hand glass, especially all follicular cells. There is striking resemblance in intrinsic structure between the nucleus-cellules here of Figs. 10-11.

(1) Corona radiata nucleus-cellules with Fig. 1.

(2) The double row nucleus-cellules of the syncytium; Langhan's cellule, Figs. 1-45.

(3) The primal uncolored blood corpuscle of the primal uncolored white blood circulation; Figs. 31-34-39-41-42-43.

(4) This similarity in blood corpuscle picture extending into the 5th and 6th week of ovum growth; pre-erythroblast; as witnessed in the blood collecting

sinus at the head of the umbilical cord at 5-6th week, Fig. 41. Then, too, there is direct hereditary descent and relation between all four of these nucleus cellules. Corona radiata ring, zona-pellucida; vitelline membrane with vitellus; runway between zona-pellucida and vitelline membrane well shown; gestation cyst and chromosones all well and clearly shown; capability of free and easy mobility between zona-pellucide and vitelline membrane; and between macular cyst and vitellus well suggested; the faint body touching margin of macular membrane to the right gives picture of an escaping polar body.

This Fig. 10 shows the ovule in ripened condition with gestation cyst toward the center of ovule.

"Should fertilization occur, the gestation cyst rises to the upper part of the ovule from its center in the vitellus. Then, in the now amnionic sac, the embryo trace develops above, along and within the gestation sac. Necessity of nutrition compels this wandering of gestation sac to approximation to the chorion; there fixation and later placentation occurs; and this is so even in the pathological form." See Fig. 66.

The Ovule, Canine

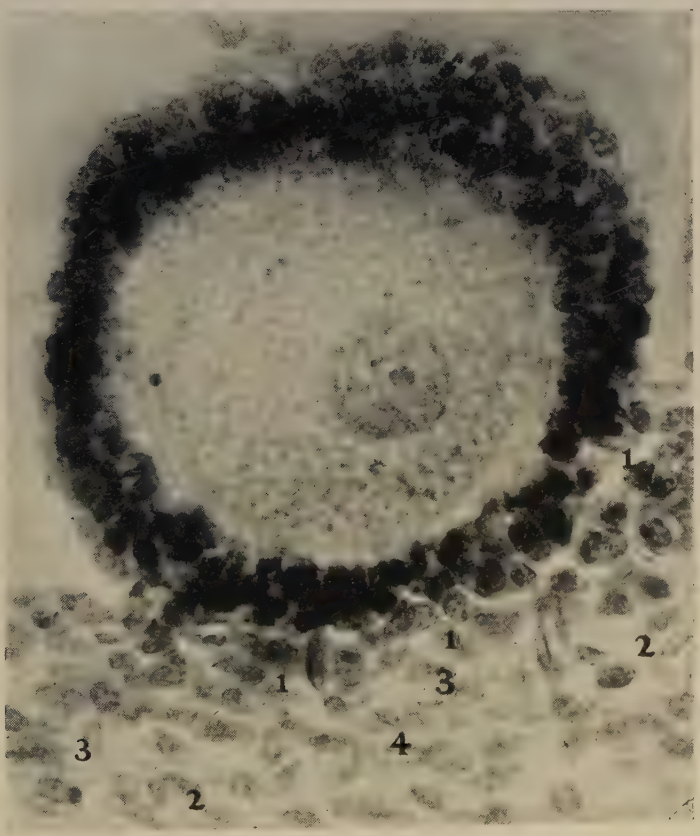


Figure 11

Fig. 11. Ovule, canine, enlarged. Very interesting, outstandingly so, because of division of corona radiata cells; compare cells here and those appearing in other ovules. Cells; cell division and multiplication very similar here to the human picture.

Direct descent is

(1) Corona radiata cellules, and their nucleoli, situate in the upper reaches of the ovule, in detail of structure, like the Langhan's cellule. Compare Fig. 11 (1) with Fig. 1.

(2) When fertilized, they give origin as offspring to the syncytial cellules in the upper reaches of the primal zona-pellucida-chorion of the ovum, the syncytium.

(3) The cancer cellules are offspring of the syncytial cellules.

(4) The primal syncytial cellular divisions are prototypes of cancer cellules and their divisions.

(5) Same in human.

Types of Cell Division Here

(1) The round multinucleolated cellule; the multinucleolated feature of the free nucleus-cellule, for the corona radiata cellules are free nucleus-cellules, without surrounding cytoplasm; compare Figs. 1-4-10-11 (1). Compare with the spinal type of cancer cell.

(2) The spindle-shaped elongated cellules, showing nucleoli for division into several offspring; this type common in cancer.

(3) Kidney-shaped cluster nucleolated condition as though just ready to break up into several offspring. Common type in cancer.

(4) An elongated, in differential division, multinucleolated nucleus-cellule about to break up into several offspring. Mention this cellule here in particular for here is the same multinucleolated nucleus-cellule in canine ovule follical cellule division expression that is seen in text book histologic illustration, and is there described as "mesamaboid interconnective tissue cellule, endothelially inclined", in descriptions in connection with the development of the endothelium in the quite adolescent human ovum.

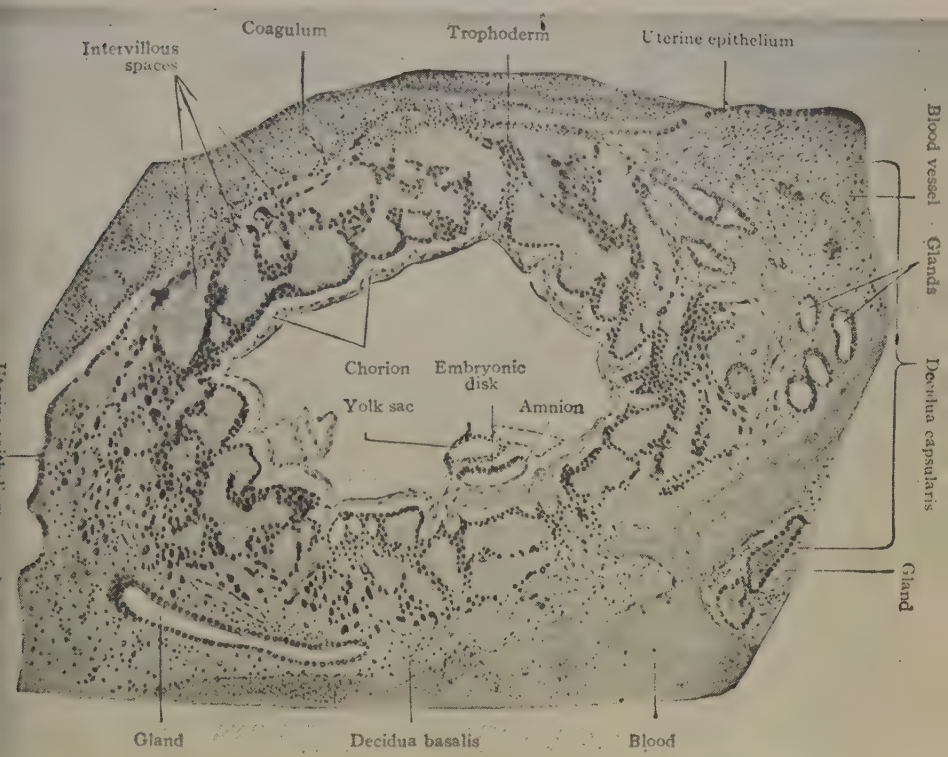
This multinucleolated cellule is not of connective tissue origin, but one form of this corona radiata cellule division; compare Fig. 6 (3), 51 (3). This type cellule is common in cancer, see Fig. 55 and others. These spindle shaped cellules seem to be common in this area.

The Ovum, Human, 3-4th Week

Figure 12

Fig. 12. Intrauterine 3-4th week; found by patient, as thought, in excessive menstrual discharge. Size 16x11x8 m.m.; well developed villi. See also Figs. 14-15-18-26.

PETER'S OVUM



Section through very young human chorionic vesicle embedded in the uterine mucosa. *Peters.*

FIGURE 13

FIG. 13. Introduced here to show by comparison in early period 2-3rd week especially:

I. Very small area marking amnio-embryonic area.

II. Much larger area marking the peri-amniotic cavity, that greater part of the whole chorionic cavity not occupied by the amnio-embryonic area. Here like in other illustrations seemingly unoccupied, but occupied by a delicate arachnoidal connective tissue, also called Magma Reticulare; supporting:

1. Chorio-periamniotic blood vessels and anastomoses with
2. Blood vessels of Blood Islands.
3. Vessels of Area Vasculosa;
4. Vessels of Extra-embryo origin with those of the Embryo;
5. Vessels of Umbilical Vesicle; later large potential yolk sac;
6. This arachnoidal tissue acts to support these structures as between each other and also as protective supporting fixation between themselves and the walls of the chorion; such structural conduct is characteristic of early ovum life only, for all this conduct and function disappears as adolescence grows.

III. Again how small in size and volume, at this early period is the embryonic area, in comparison to the rest of the ovum as a whole.

IV. Trophoblast, here trophoderm, the peripheral proliferation of the syncytium of the chorion and villi.

Citing from Minot: "Peter's Ovum still remains one of the earliest of stages of man yet described. It has a small chorionic vesicle; on the exterior of which is a very considerable layer of trophodermic cells. There is an embryonic shield present at this stage, but nothing which can properly be called an embryo."

Discussion. How diminutive the embryo-trace is here at 14-15 days, compared to the ovum as a whole.

Picture the immense activities of the syncytial cellules of the chorion, who provide all nutrition to enable this ovum growth, including the embryo; the embryo not contributing to ovum growth as a whole; picture also the immense proliferation of the syncytial cellules; internally and externally, and as seen also at about the same period of extra uterine growth, in Figs. 18-19-20; in the latter is also seen the fierce proliferation of the syncytial cellules giving origin to the blood corpuscles and to the origin of the primal white blood circulation; to the 5-6th week.

Earlier ova too small for good differentiation.

DECIDUA SEROTINA

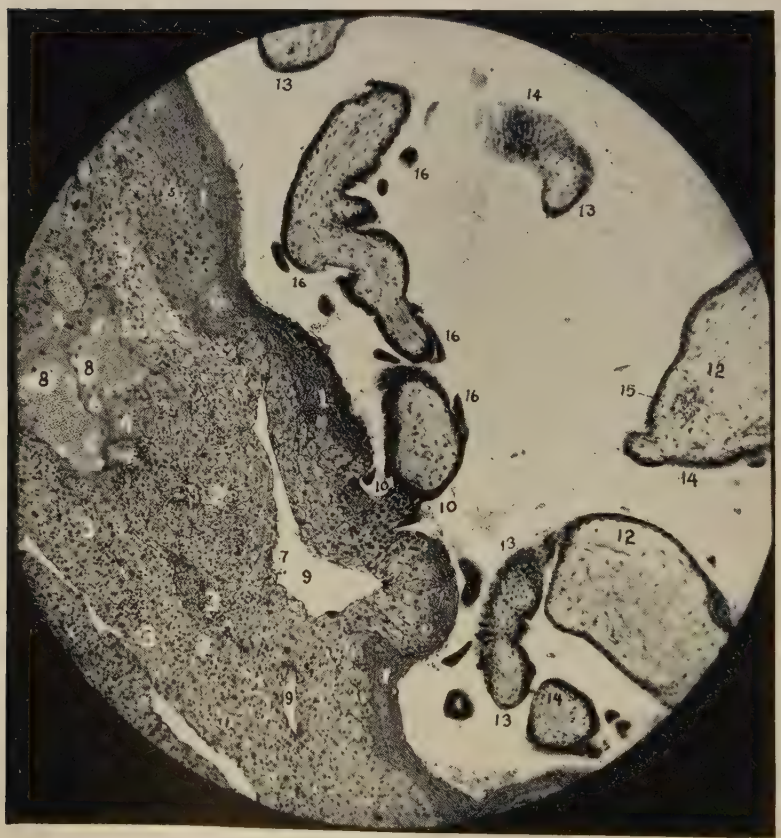


FIGURE 14

FIG. 14. Decidua serotina. Intrauterine 7-8th week. (1) The dark border of the decidua is canalized fibrin, the superficial exudate of the decidua. This ooze or exudate is analogous to the serous exudate of all inflammatory areas, and here is caused by the irritation of the amoebic action of the syncytial nuclei, Langhan's cell, of the villi upon the decidua. (2) Decidual cells, from the large vigorous decidual cell to the degenerating, fading, lysic decidual cell in the villi decidual attachment (10). (3) The small dark dots are not alone formed by a round cell maternal exudate of inflammatory or irritational nature, but principally they are the invading wandering Langhan's cellule nucleolicellulettes, from the nuclear division of such nuclei of the syncytium of the villi.

DECIDUA SEROTINA, CONTINUED, VILLUS-SEROTINA ATTACHMENT

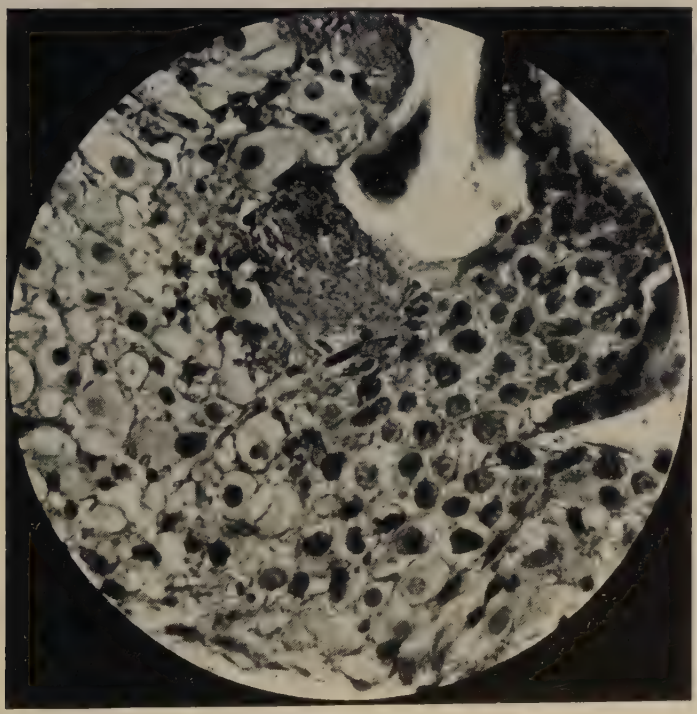


FIGURE 15

FIG. 15. Nuclear proliferation tissue of syncytium well shown. Notice especially the invading proliferating unit is the Langhan's nucleus only. There is no cell type to the invading unit. In contrast observe the perfect cell type outline of the decidual cell structure. In a previous article, the observation was advanced that there is no typical cell structure of the syncytium of the villi. This illustration in itself argues most eloquently to the point in question and leaves no doubt that the invading structure Langhan's cellule, is not a technical cell but a free nucleus. Notice in the higher coloring of the nuclei, the suggestion that the nucleus has an active attacking corrosive breaking-down character, and amoebic digestive function. Note the decidual inflammatory exudate disappearing because of amoeboid activity of the syncytial cellules.

EXTRA-UTERINE OVUM, 2-3RD WEEK

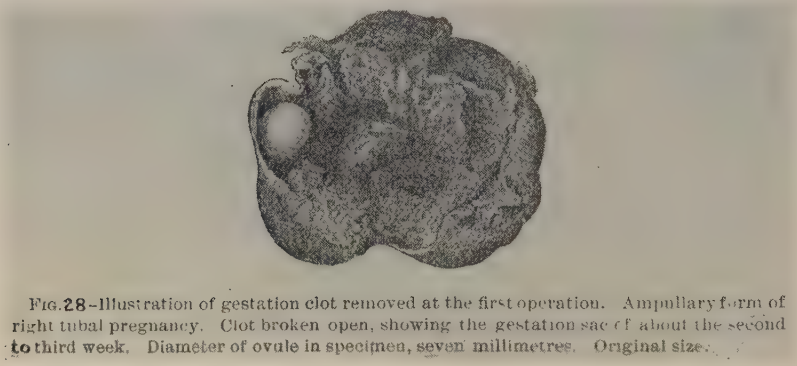


FIG. 28—Illustration of gestation clot removed at the first operation. Ampullary form of right tubal pregnancy. Clot broken open, showing the gestation sac of about the second to third week. Diameter of ovule in specimen, seven millimetres. Original size.

FIGURE 16

FIG. 16. Illustration of gestation clot removed at the first operation. Ampulary form of right tubal pregnancy. Ovum in situ, in clot, 2-3rd week (original size).

EXTRA-UTERINE OVUM SHELL (PART) 2-3RD WEEK

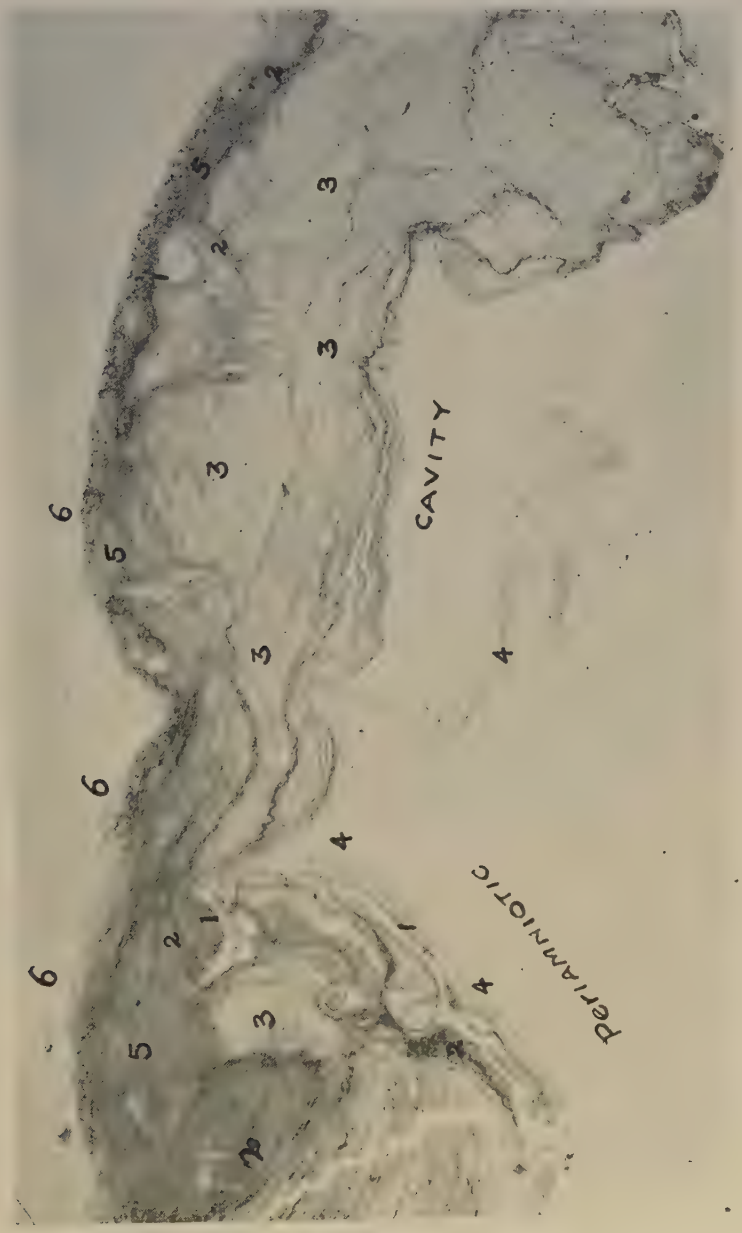


FIGURE 17

(1) Chorion with extensive syncytial proliferation.

(2) Trophoblast and nucleoli (L.C.) infiltration into peripheral environment of ovum.

(3) Coagulated effects of tubal exudates.

(4) Many small dots in stroma of villi and chorion; inwandered nuclear cells and from syncytium in trophoblast, to form with absorbed plasm, the first blood corpuscles and first blood plasm; forming the first or primal uncolored white blood circulation of life. See Figs. 18 to 24. Note especially these phenomenon in longitudinal villi sections to follow. Control carefully histology of chorion and villi; similar in every respect. The villi, large or small, are but buddings of the mater chorion with like histologic structure. All villi at these stages, 2-3rd week; 3-4th week, show similar syncytium; villus connective tissue; many inwandering nucleus-cells into primal blood spaces and blood vessels; also showing rapid, fierce blood cell division and multiplication; all features like in chorion; control these features with hand glass.

(5) Nucleoli of syncytium and trophoblast invading tissues of tube.

(6) Edge of attachment to mucous membrane of ampulla of right tube.

An Especially Long Villus of This Extra-Uterine Ovum, 2-3rd Week

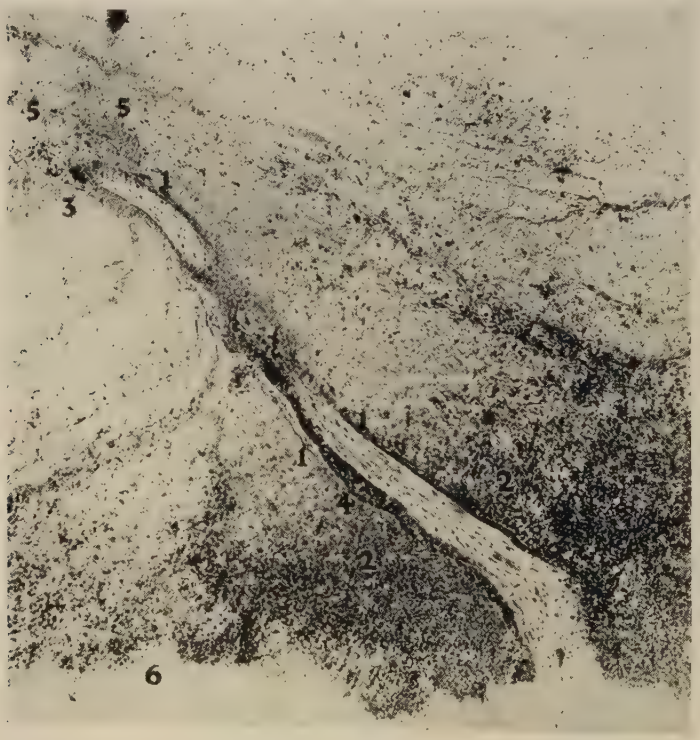


Figure 18

Fig. 18. A most interesting picture, an unusually fortunate find, of a longitudinal section of a long villus; from apex to broken off union with chorion; from another slide of this 2-3rd week extra-uterine ovum; showing

marked offensive invasion activity, denied by authorities. Note the rich inwandering and intake of nuclei and plasm, increasing from apex to ampulla, the unusually clear outline of a suggested nuclear flow; tumbling down and increasing in volume from the apex, like a great stream in and along the course of the villus; to empty at its mouth into the main stroma of the main body of the chorion. Hence now, 2-3rd week, already first blood-nucleus-corpuscles; already a first colorless blood plasm; the primal uncolored white blood circulation; quite before comparatively speaking, the later blood island, yolk sac, etc. (1) Syncytium. (2) Syncytial nucleoli proliferation conducting like trophoblast into ovum environment. (3) Apex showing rich proliferation at (3) and (5). (4) Primal blood spaces in syncytium. (6) Chorion where villi were stripped from chorion in handling. It will be remembered that origin of blood is anterior to pulsations of the heart.

Attention is directed here especially to the trophoderm, Figs. 18, (2) (3) (5), and 19, (3), extra-uterine pregnancy, 2-3rd week. Here, like in the intra-uterine ovum, Fig. 13, the trophoderm is but the peripheral proliferation of the syncytial cellules into the cells and tissues of its environment. It is not a separate tissue as usually understood. The function of the trophoderm is to paralyze, break down and make readily assimilable such environmental cells and tissues; easier to digest, to amoeboid, and to be absorbed as pabula by the syncytium to the ovum at large; at the same time it makes space for the ovum to grow in; likewise creating the large and small intervillus decidual spaces. In the extra-uterine pregnancy, see Figs. 18 and 19, 2-3rd week; in the intra-uterine pregnancy see Figs. 25, 26 and 27, 3-4th week of ovum growth. As pregnancy advances the trophoderm declines so that soon the trophoderm disappears almost entirely. Though the statement is made that the syncytium is product of the trophoderm, it will be more correct to state the other way around; the trophoderm is product of the syncytium. Here is example showing the source of the trophoderm, and of amoebic function from which the cancer cellule erosion has been inherited.

Here in this example of active antagonistic tunneling invasion of maternal tissue by the villi is splendid proof over against the views of:

"Ovum tissues do not invade maternal tissues and aggressively so."

A glance at this illustration alone conveys the impression of its efficacy as an amoeboiding agency, here for pabulum and room for the growing ovum.

In the carcinoma of the syncytium there is a duplicature or analogue of this conduct. In the normal conduct such amoeboid activity is controlled and checked by the normal hormone of pregnancy. In the cancer this hormone control is lacking, consequently widespread devastation and death. Again this amoeboid characteristic becomes the cancer erosion of the malignant cancer cellule; inherited from its normal Langhan's cellule ancestor.

In the carcinoma of the syncytioma there is a duplicature or analogue of this amoeboid conduct. This is well seen in the pulmonary metastases of the syncytioma. These syncytial nucleoli uncontrolled, wander, invade and are carried in the current of the maternal blood circulation to the intricacies of the bronchioli, there they are caught and they multiply and flourish as malignoblasts breaking down all tissues and factoring into outlines strongly suggestive of the villi with their syncytial characteristics as so well seen in Figs. 54 and 8; and this phenomenon conducts in this manner entirely separated and wholly removed from any influence of the embryo and ovum proper; in fact none at all for they are now absent; though originating there; showing also that the metastatic nucleoli have taken on a vicious uncontrolled proliferation function, as in the carcinoma.

THE TIP OF THIS LONG VILLUS ENLARGED

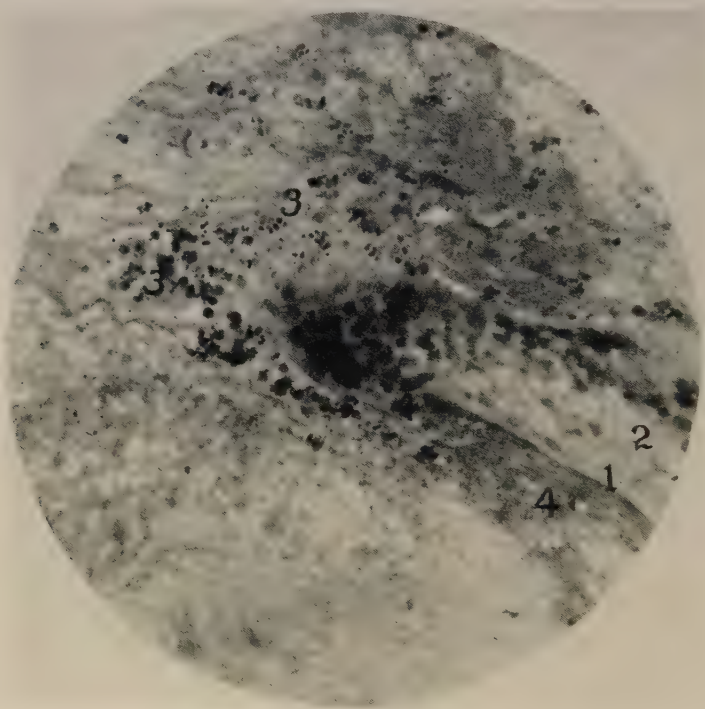


FIGURE 19

FIG. 19. Unusually clear amplification of apex of this long villus, Fig. 18, to show more clearly minute histology and function; syncytium (1) with white open space (4), suggestive of blood spaces; (2) inwandered nucleus-cellules centripetal in conduct and flow; arranged as though flowing along primal blood spaces and vessels in stroma of villus; (3) syncytial nucleoli proliferation; see text. (1) (2) Primal uncolored multinucleolated blood cells, proving the red erythroblast not that primal blood cell.

AMPULLA OF SAME VILLUS EMPTYING INTO CHORION

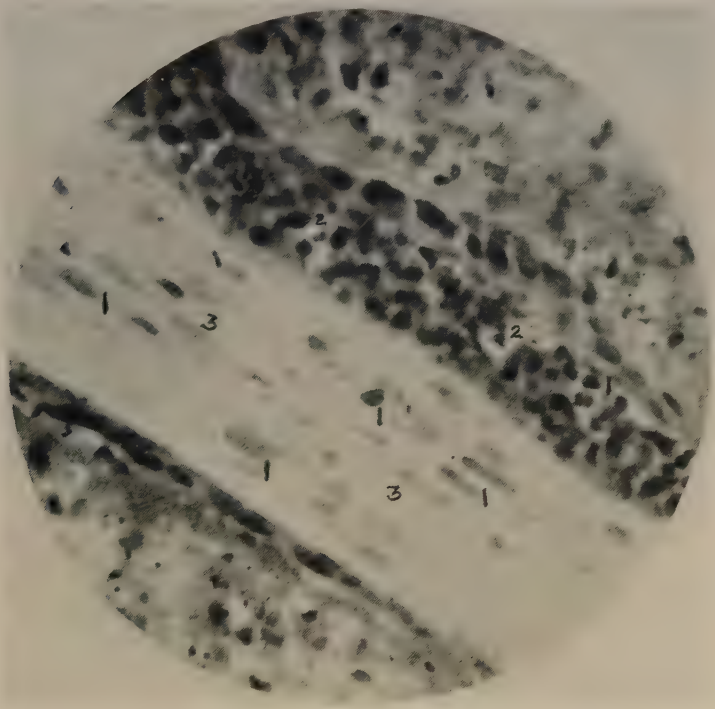


FIGURE 20

FIG. 29. Amplification of ampulla of this long villus. Fig. 18, rich suggestion here of first primal blood spaces (2) and blood vessels with first blood corpuscles (1); centripetal in conduct of flow.

(1) Round nuclei without cell determination: characteristic uncolored, multinucleolated nuclei, inwandered from trophoblast and syncytium; blood spaces in syncytial (2) border and trophoblast (2), initial blood spaces and blood vessels (2), in border and in villus (3) stroma: division, spindle-shaped elongated, (1), under way and as seen in small nuclei, but were just previously nucleoli of a multinucleolated nucleus. And here can be seen how readily fluid and all kinds of liquid can, and do pass from environment inwards, through syncytial spaces, nuclei and plasm. Analogously to the chyle through the intestinal villi in post mature life. The tubal villus in extra-uterine pregnancy at 2-3rd week.

THE TUBAL WALL IN EXTRA UTERINE PREGNANCY, 7-8TH WEEK

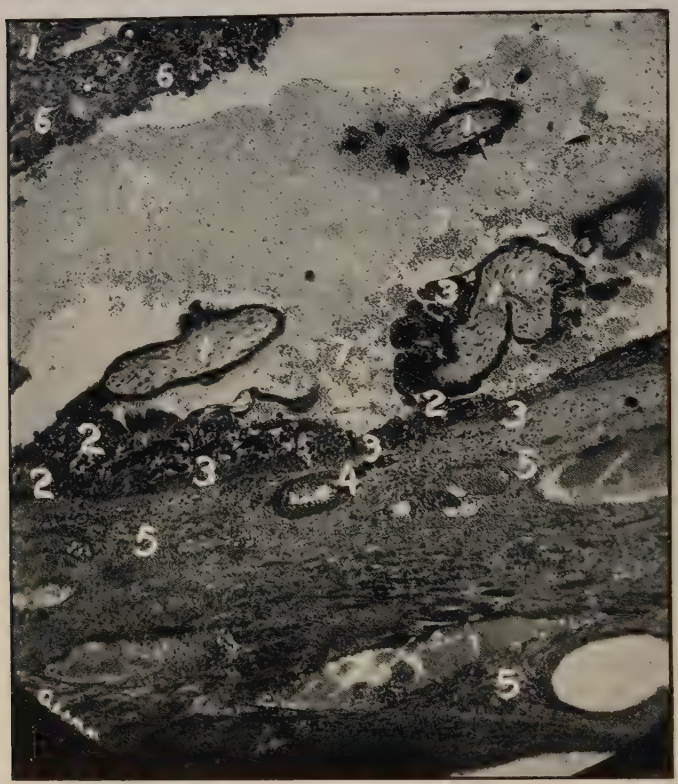


FIGURE 21

FIG. 21. Section of tube wall 7-8th week, extra-uterine pregnancy. (1) Villi with profuse Langhan's cellules (2) proliferation, nuclei without distinct cell wall structure, cytoplasm, reaching to (3) pseudo serotina, made up of Langhan's cellule proliferation tissue, (4) Eroding (malignant) effect of nuclei well shown, especially towards artery, which is almost perforated. (5) Langhan's nuclei wandering into all the coats of the tube. (6) Intervillus or bridging tissue made up of proliferative syncytium and nuclei, torn apart because of hemorrhage. See also Fig. 48. The villus attachment in this illustration does not rest upon a special metamorphosed tissue like the decidua in intra-uterine pregnancy. Here it rests upon the connective tissue of the sub-mucosa. The mucosa and folds having disappeared by amoebic action on the part of the invading Langhan's cellules. In other areas the amoebic process has extended beyond the sub-mucosa into and through the inner or circular layer of the muscular coat of the tube. Throughout the connective tissues and coats of the tube walls are seen wandering nucleoli, "blazing the way into the surrounding tissues for the advancing villi by neutralizing, breaking down, and making readily absorbable the tissue structures of its environment." Here the environment of the villi is not decidual, there is none. The place of the decidua is taken by proliferation of Langhan's cellules. Kühne, 1892.

EROSION, AMOEBIC ACTIVITY OF SYNCYTIAL NUCLEI
UPON TUBAL WALL AND VESSEL, 7-8TH WEEK

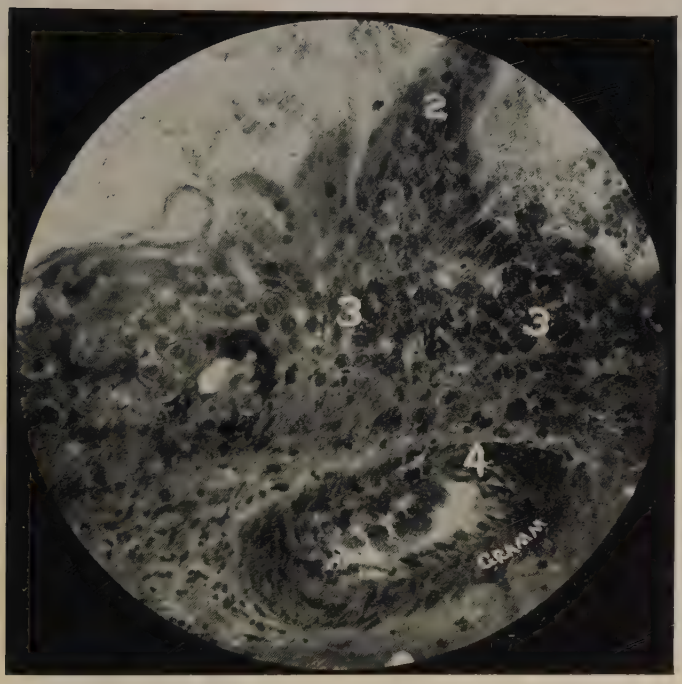


FIGURE 22

FIG. 22. (4) Extra-uterine 8th week ovum! mucous membrane has quite disappeared from this tubal wall; (4) showing dangerous and ofttimes fatal blood vessel erosion. Notice dissolution of and the open slip interval in upper vessel rim; ready for rupture.

TUBAL WALL SHOWING WANDERING FEATURES OF LANGHAN'S CELLULES AND CELLULETTES, 7-8TH WEEK

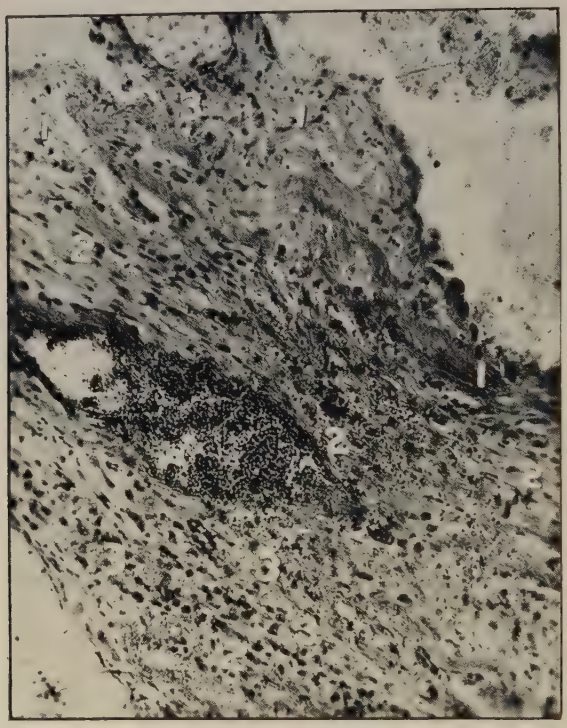


FIGURE 23

FIG. 23. Tubal wall of 7-8th week tubal pregnancy. Invasion of all structures of tube wall by syncytial proliferation; also to show how these nucleoli can find entrance into maternal general tissues through nucleoli wandering and passing into maternal general circulation; 1-2-3, all Langhan's nucleoli aggressively wandering.

UNAFFECTED TUBAL WALL, 7-8TH WEEK

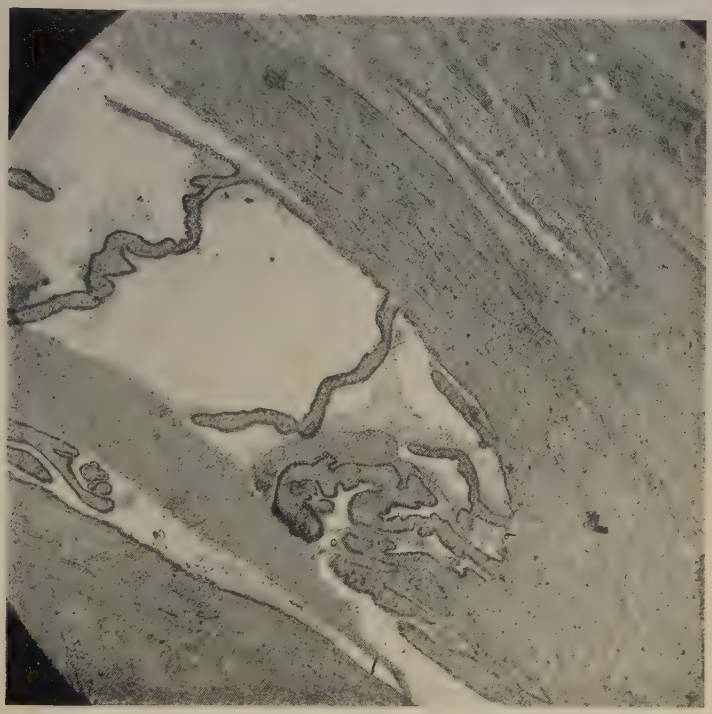


FIGURE 24

FIG. 24. Tubal wall opposite area shown in Fig. 21; here the fimbriae tube wall have not entirely disappeared by amoebic activity or other changes as centrifugal pressure due to the presence of the growing ovum in the tube. Again note particularly how this tube wall mucosa is so strikingly unchanged though opposite to ovum implantation, as seen in Fig. 21. How different the picture in the mucosa of the intra-uterine pregnancy, where the transformation of the uterine mucous membrane is general and symmetrical throughout into the new transformed decidual membrane with its large characteristic decidual cells, now metamorphosed into decidua vera, serotina and reflexa.

Coming Back to the Intra-Uterine Ovum of 3-4th Week

Amoebic Action of the Ovum, Langhan's Cellules, Towards the Decidua

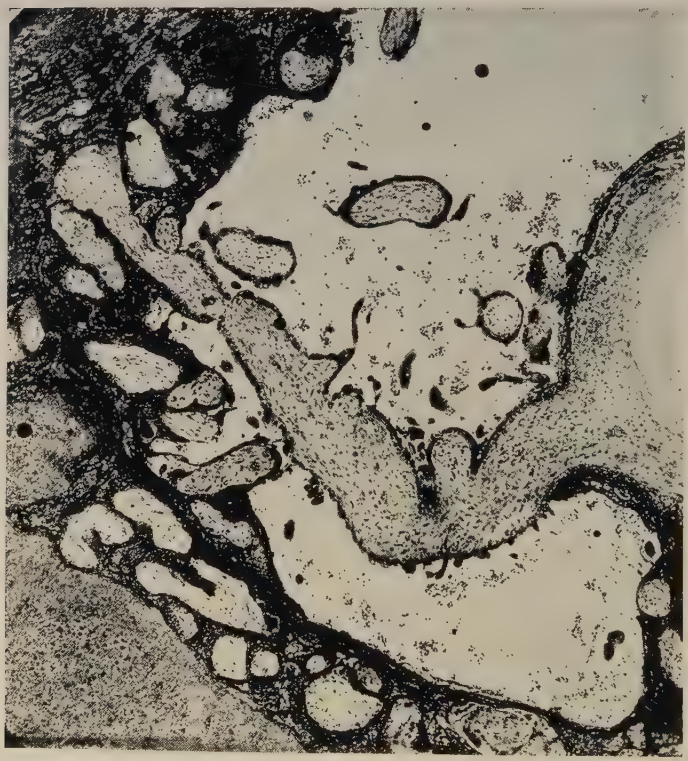


Figure 25

FIG. 25. Shows a small part of the circumference of a 3-4th week intra-uterine human ovum shell; large fixed trunk villus from chorion to decidua serotina-basalis; such a trunk villus would be an explanation for an original fixation attachment in the earliest times of ovum wandering, attachment and implantation; in Fig. 26 is seen an enlargement of this part of this shell the better to show the distal fixed extremity of this trunk villus, attached to the decidua just below a decidual cap; suggesting priority in attachment and age of villus; also shows, how, by amoeboid digestion of maternal environmental tissues intervillus spaces, large and small, are formed; small villi free and fixed, bathed in maternal blood plasm; especially note large intervillus chorion decidual spaces now occupied by maternal blood plasm, where formerly was solid maternal decidual tissue. Note the many buildings from chorion and villi; in these spaces, the elongated, small free floating forms are but superficial clippings from other villi tips produced in microtomizing specimen. Small specks in fields of intervillus spaces are freely floating syncytial nucleoli-cells; single and multiple; cell islands; and loose particles of nuclear elements, proliferated and wandering from syncytium of chorion and villi into and in the maternal blood plasm. Here is a type of such wandering as seen in fluid tissues; Figs. 21-22 and 23 show same type of wandering expression into and in the meshes of solid maternal tissues, there of the tube wall. In chorionic cavity, concentric rings of area vasculosa blood vessels well shown; subsequent figures show them to be also vessels anastomotic between the true blood islands of the chorion. See Figs. 26-27-28-29.

Illustration as a whole shows how easy it is for these particles of Langhan's cellules and tips of villi to be received and enter maternal blood circulations and be distributed throughout the maternal body; thus accounting for the ease with which emboli and other pathological processes may be originated; and the ease with which the Langhan's cellules and cellulettes may be distributed in both maternal and embryo bodies.

AMPLIFICATION OF OVUM IN FIGURE 25

FIG. 26. Part of the 3-4th week intra-uterine ovum enlarged; showing manner in which ovum shell is surrounded by decidua; due to amoeboid-digestion of maternal decidual tissue, hence are formed these large decidual-chorionic spaces, filled with maternal blood, villi and free cellules of Langhan's cellules; note at (8) large trunk villus very probably marking original caught on, fixation of ovum to decidua; now can see first blood island (5) within the great chorionic cavity, showing considerably later and as a secondary development to that of the villi and chorion; their growth is due to the primal uncolored white blood circulation; same applies to yolk sac. Hence neither blood island nor yolk sac, the originators of blood and circulation. (1-3) Decidua; (4) chorion; (6) area vasculosa. From "Origin of Blood and Origin of Cancer."

Also shows great and delicate discriminatory growth control influence. In these large inter-deciduo-chorionic spaces, made by the normal amoeboid digestion of the decidua by the syncytial cellules of the chorion and villi, large volumes of maternal blood circulation and plasm pass through and interchange is made; bring all kinds of elements, nutrient, chemical, endocrine, infective and otherwise, to the surfaces of the chorion and villi, for absorption and assimilation; the returning maternal blood circulation also taking away waste products of ovum metabolism. How easy it is for villi particles, syncytial cellules and cellulettes to be taken up by the maternal circulations and thus be disseminated throughout the tissues of the mother.

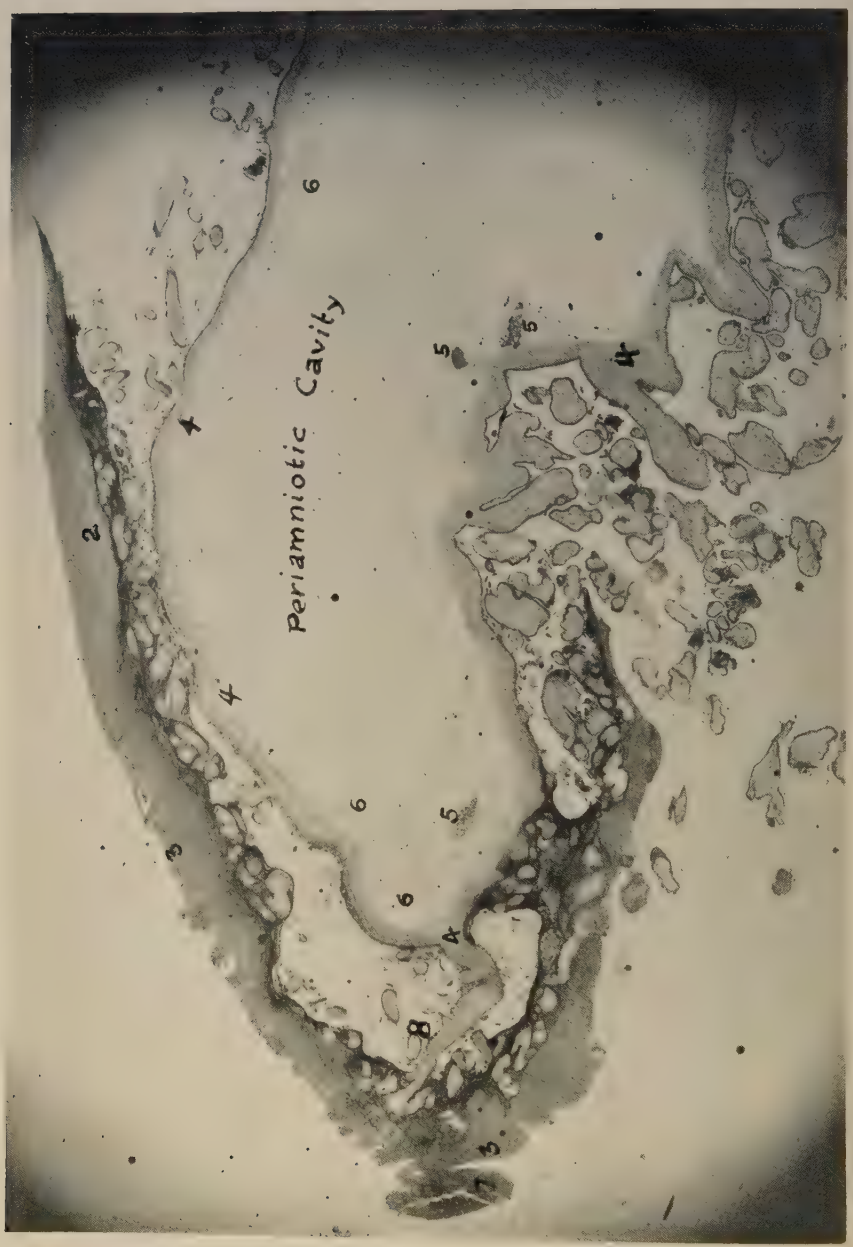


FIGURE 26

STAHL — THE NORMAL SYNCYTIAL LANGHAN'S CELLULE ABERRATED

ANOTHER VIEW OF THIS OVUM

FIGURE 27
101

FIG. 27. Again to show blood islands distributed along inner free margin of chorion. At left, in cavity, delicate punctuated appearance suggestive of area vasculosa, for it is made up of blood vessels in an arachnoidal tissue whose walls do not stain; again free margin of the broad rich chorion not yet fused with the amnion. Embryo and appendages. Not quite whole cross section of ovum at 3-4th week.

EMBRYO AND PARTS OF THIS OVUM ENLARGED

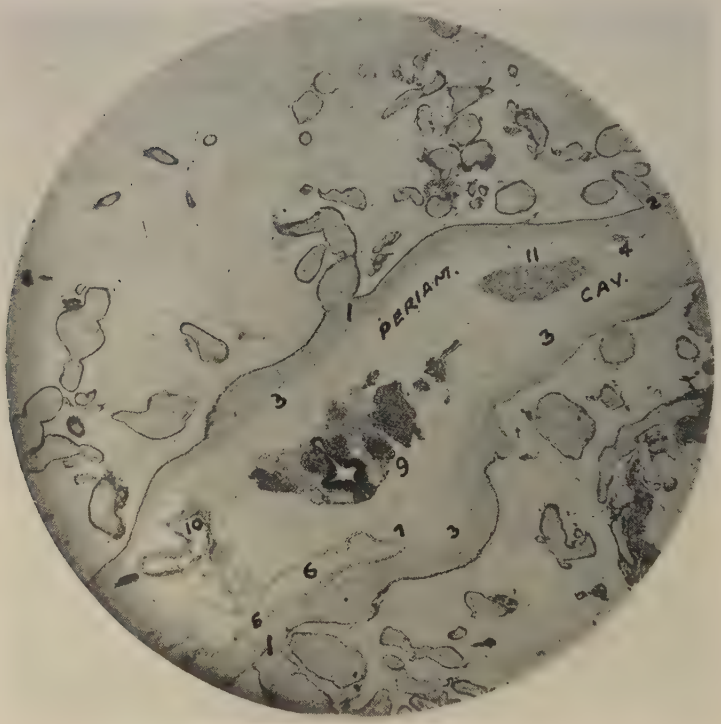


FIGURE 28

FIG. 28. Another section of this 3-4th week intra-uterine ovum; among many other features showing contrast between the open free margins of the chorion and the closed, by amnion fusion, margins of the chorion; likewise commencing waning influence of all inter-amnio-chorionic structures and conduct. No suggestion, even here, of an allantoic-chorionic spread; but where amnion spread occurs the markation is very distinct. (11) Metanephros. Blood corpuscles, Langhan's type, show very clearly type same as in Fig. 41, for amplification see Fig. 37. The embryo and other parts here seem to have been pushed through or broken through their amnionic membrane into the periamniotic space—due to pressure and maybe rough handling, either intra-labor exertion or crushing in delivery; maybe also to rough laboratory handling.

A Villus From This Chorion, See Fig. 28 (2)

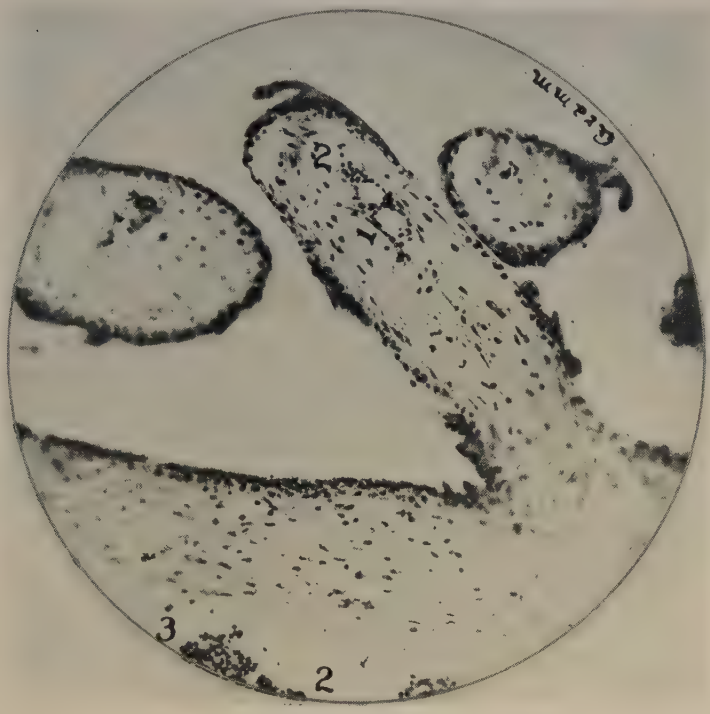


Figure 29

Fig. 29. To show amplification and to show especially blood island feature secondary to villi development. As proven by this blood-space vessel (1) emptying into the blood island (3) inside of free margin of chorion. Note in all these tissues there is only one predominating cellule throughout blood vessel and chorionic stroma, and that is the Langhan's cellule. Blood space vessel apparently with an endothelium, but not so. These cellules are all Langhan's cellules inwandered from the syncytium towards entering the blood vessel circulation. Here and in next Fig. 30 villus stroma show they are not hollowed out but are solid with villus stroma, though perforated with blood spaces and vessels.

AMPLIFICATION OF SECTION OF THIS VILLI AND CHORIONIC SHELL, 3-4TH WEEK; SEE FIG. 28 (1) BELOW

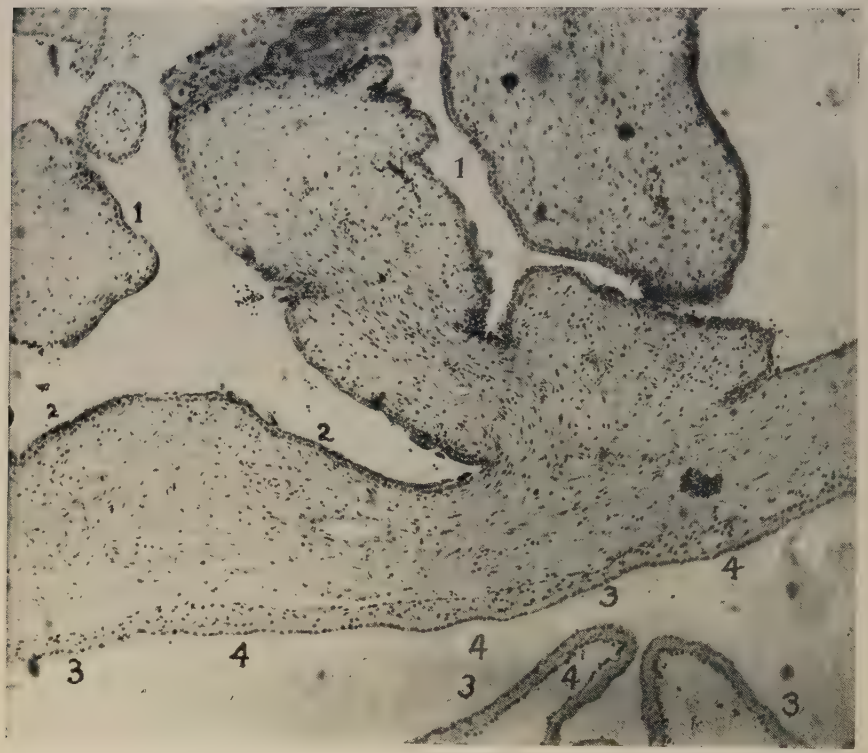


FIGURE 30

FIG. 30. Double row syncytial cellule arrangement especially clearly shown in these villi; check "no endothelium" feature; amnion fusion very distinctly marked; here again histologic similarity in structure of villi and chorion well shown. Of all interesting testimony here furnished by this illustration, the most valuable one is the absolute proof of blood vessels occurring in the amnion (4); and here are many such. Text book citation: "Blood-vessels are wanting in the Amnion." "No blood vessels or nerves are known to exist in the amnion of the human embryo." Throughout stroma and syncytia these cellules are wholly Langhan's cellules in type.

ELONGATED VILLUS FROM THIS OVUM SHELL, INTRA-UTERINE.
PROFUSE PERFECT WHITE BLOOD CIRCULATION AT 3-4TH WEEK.
SEE FIG. 18 AT 2-3RD WEEK, SHOWING NEARER COMMENCEMENT OF SAME.

FIGURE 31

Fig. 31. Langhan's cellule, double layer nuclei, clearly shown throughout stroma and also shown the same coarse nuclei inwandering throughout the stroma and to enter the blood spaces and vessels. This picture amplifies and makes more easily comprehensive, the comparatively speaking large flow of nuclei seen in the stroma stream of the long narrow villus of the extra-uterine series, Fig. 18. This nuclear inwandering diapedesis into blood space and vessel is very frequently seen in the stroma of the villi and chorion, and as observed before, furnishes the corpuscular flow into the blood stream. It is just this appearance of the diapedesis of these Langhan's cells into the blood vessels that will explain the error in the "Endothelial proliferation theory" as an origin of blood corpuscles. Just about the center lower margin is seen a blood vessel with open communication to favor direct entrance of the Langhan's cellule into its lumen.

Amplification of Foregoing Area

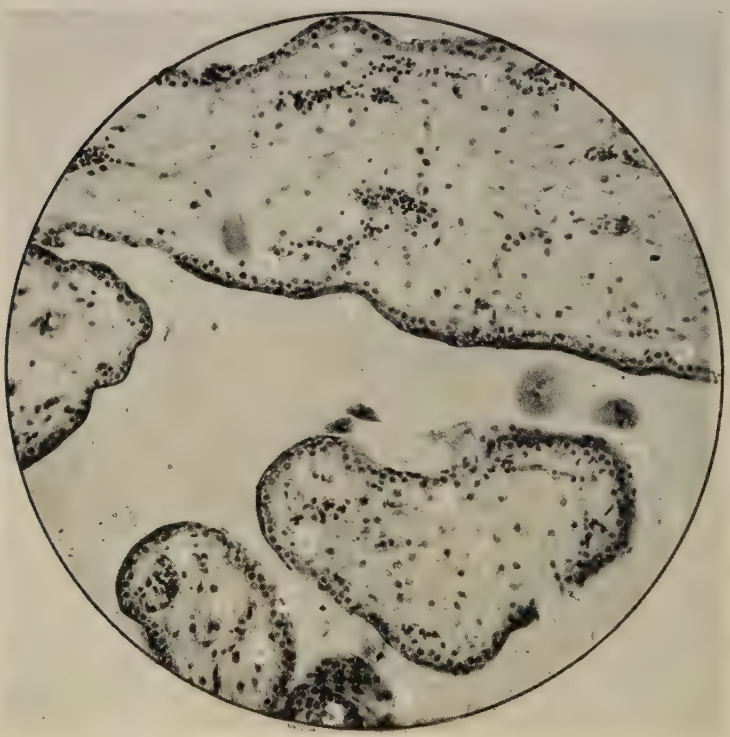


Figure 32

Fig. 32. Showing perfect primary white Blood Circulation development at 3-4th week of ovum growth; and more particularly of the entrance of the Langhan's cellule directly into lumen of blood vessel. Serotinal villi from the same ovum specimen as in Figs. 25-26. (1) Large villus longitudinal section shows beautifully the double layer; (2) the outer nuclei in a denser, more consolidated

syncytial stroma; (3) the inner nuclei surrounded by a distinct halo, this limited by a structure interpreted as undigested plasm, giving the appearance of a cell-limiting membrane. This disappears with growth, so that at maturity there is only the nucleus left, see Fig. 53. (4) Other villi in cross section. In smaller villi observe the plasm (5) of the central body continuous into the periphery (5) without apparent change in consistency and little in color. (6) are blood vessels. (7) Inner Langhan's nuclei can be traced directly into blood vessels, demonstrating that the nuclei are directly concerned in furnishing corpuscles for the blood, the white blood circulation. That the nuclei should serve as a source for the corpuscles for the blood seems peculiarly appropriate, for their purpose is nutrition providers and carriers. (8) A short distance from this spot, close to the inner nuclei, is a blood vessel with a nucleus touching its wall. An empty space between two nuclei just above the vessel suggests that this nucleus has wandered from the empty space to enter the vessel, Fig. 34. In places the delicate walls of the blood vessels seem to touch the border of the inner nuclei as though to favor their entrance. This idea is conveyed at (7). It is beautifully shown, and more clearly so, in the next Figs. 33-34-35-36 (1902).

To the Researcher interested in the origin of blood in the chick. He will remember that all investigators are at a loss to explain the origin of the primal nuclei in the blood complex in Pander's Blood Islands of the chick. Above is a partial explanation of such origin. Can he solve the rest of the riddle or mystery. In my next research, Origin of Blood in the Chick, this mystery will be fully explained. (1934)

This figure of the Primal White Blood circulation, at 3rd to 4th week, intrauterine of growth, showing its vigorous and perfect development already at this early period of growth, is before Embryology and Histology since 1902. Figures 18-19-20 show same a week earlier, at the 2nd to 3rd week in an extra uterine pregnancy: same in type of blood corpuscle and plasm as that of the intra-uterine type of the week before. Has anyone heard of this White Blood circulation of the ovum, the primal or white uncolored blood circulation? As yet there is no hematin to color it. And this circulation continuing from dawn to the 5th-6th week of ovum growth: when this blood circulation makes way to the first Red Blood circulation of the erythroblast, at the 5th-6th week; throughout the continuance of the white blood circulation the blood corpuscles are composed of Langhan's cellules only, introduced into the blood spaces and vessels by direct wandering from the second row of Langhan's cellules of the syncytium; and by the direct endopedesis of the Langhan's cellules from the stroma of the various tissues of the extra-embryo especially, as from the stroma of the villi, chorion, etc. Why text book authority should remain so silent of the white blood circulation to the 5th-6th week of growth, leaving this interval without any means of a blood circulation, seems rather difficult to explain. Without this circulation, how can growth occur?

"The erythroblast, it will be remembered, is not of the primal blood corpuscle, predominant in the first or primal uncolored blood circulation; this primary uncolored circulation is predominant in character to the 6th week; then transition to the initial red blood colored circulation of the erythroblast." Normal Blood, 1930.

AREA IN FOREGOING VILLUS, PART B, FIG. 31, 3-4TH WEEK, ESPECIALLY AT (1), ENLARGED

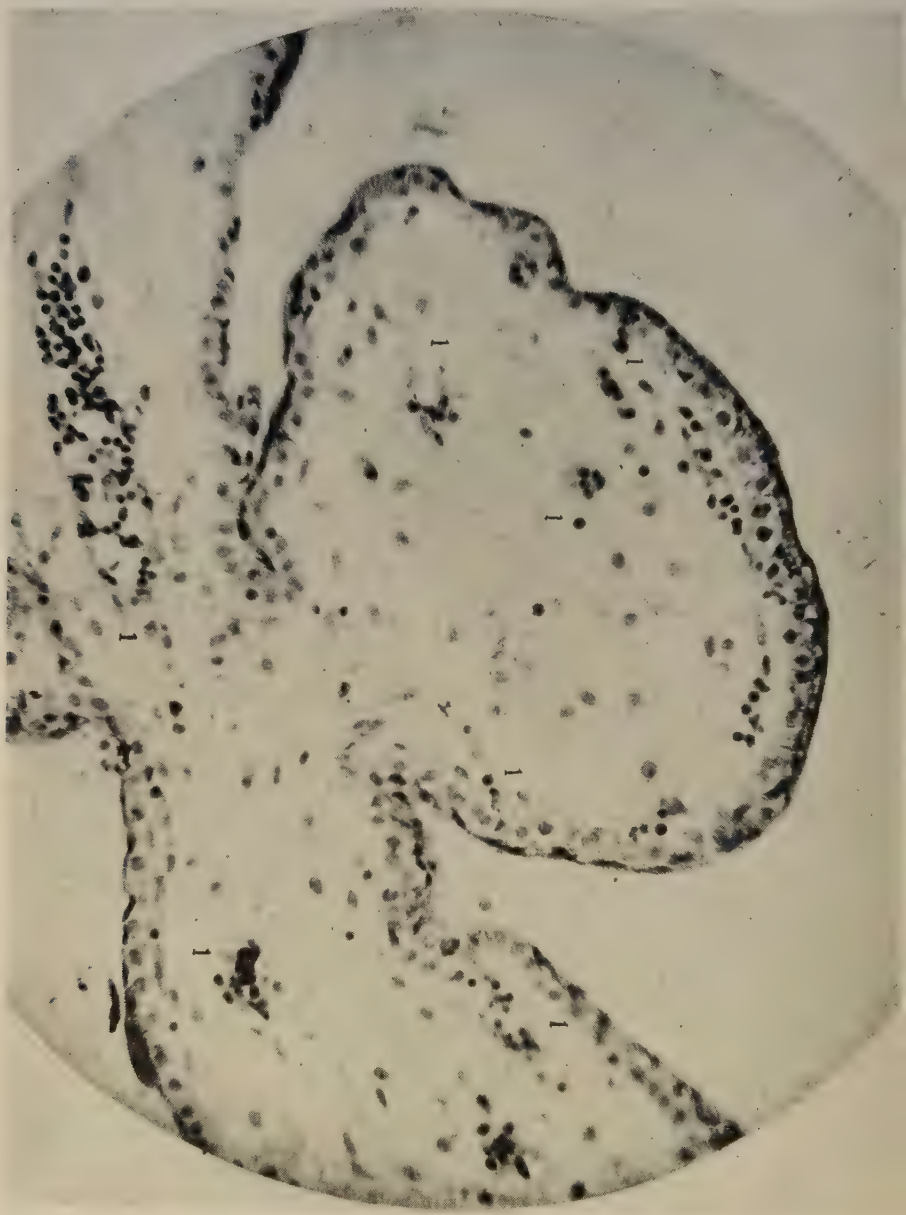


FIGURE 33

FIG. 33. This illustration shows at (1) the intimate relation between this primal villus blood space-vessel to the syncytium and Langhan's cellule. Entrance of Langhan's cellules and endopedesis encouraged by every natural arrangement and assistance. Note (1) center left, cellulette chain entering S.E. lumen of blood space vessel, for blood differentiation, at 3-4th week; very similar to blood cellulettes in Fig. 43, umbilical vein at 5-6th week.

EMPTY SPACE IN SYNCYTIUM OF 3-4TH WEEK OF OVUM GROWTH TO SHOW ORIGIN OF PRIMAL BLOOD CORPUSCLES

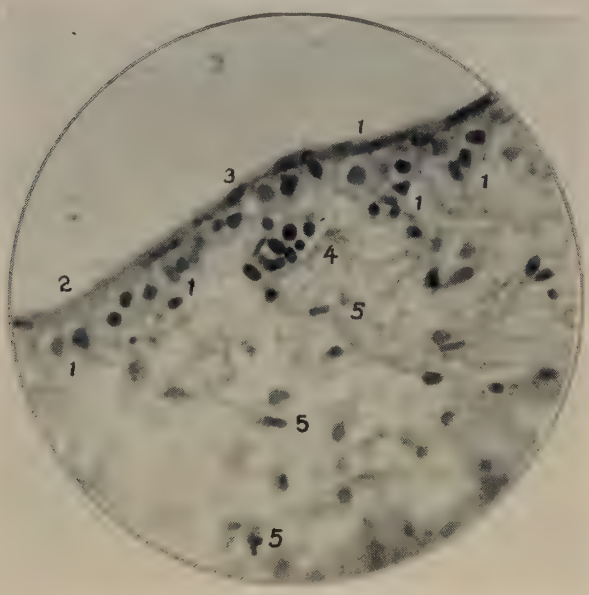


FIGURE 34

FIG. 34. Inserted here to show larger amplification of empty Langhan's cellule nucleus-space; nucleus wandering into blood space vessel; from second or inner row of syncytium of elongated villus. Note the consolidated plasm of outer row. (1) Attitude of nuclei as though in the act of inwandering from circular seat in syncytium. (2) Above in outer row very faint circular effects. (3) Empty space from which nucleus-cellule is wandering into blood space-vessel. Proof positive that the empty space lodged a smaller nucleus cellule only, not a larger regular technical cell as of an epithelial nature; viz.: a nucleus surrounded by a self limiting cytoplasm. (4) Note no endothelial lining, margin in blood space and vessel darkened as though the effect from hardening of laboratory media; such marginal effects seen frequently in subsequent illustrations—even in the large vessels of the early cord.

AMPLIFICATION OF PART A (7) OF ELONGATED VILLUS, FIG. 31 AND 32

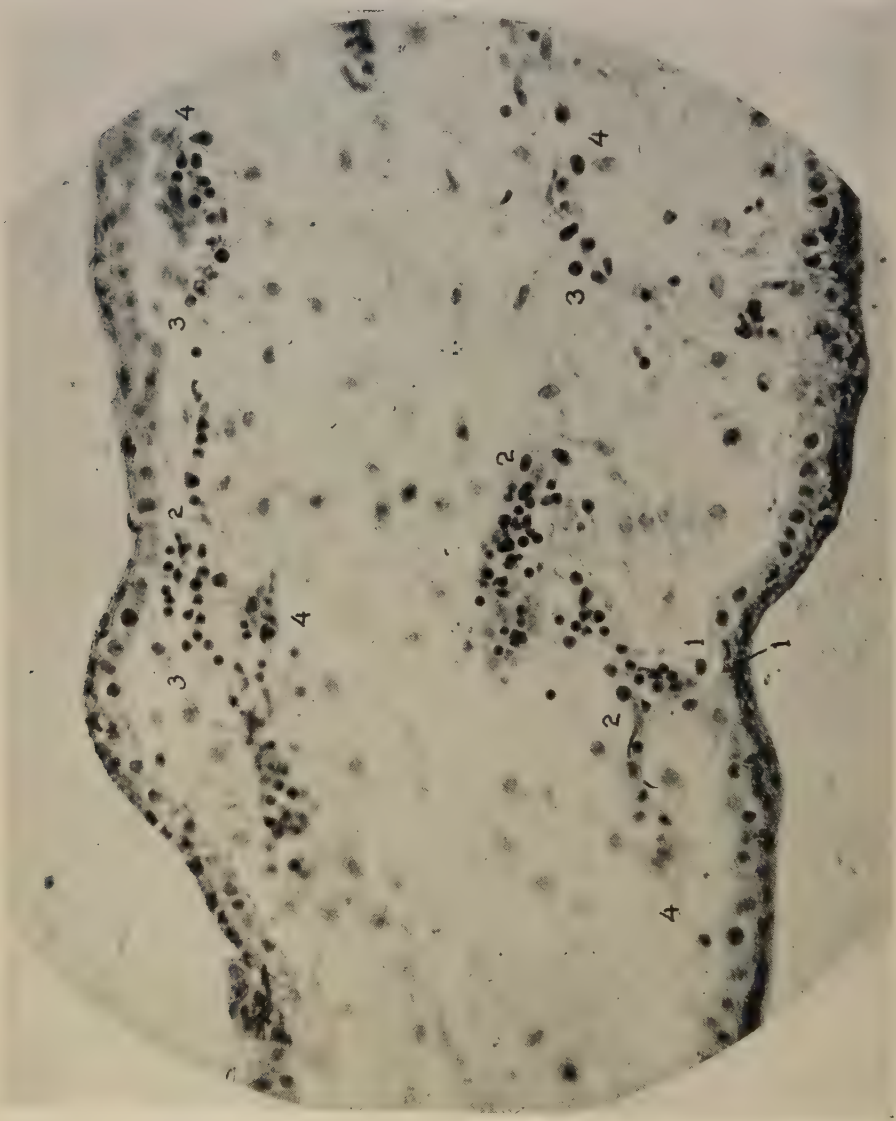


FIGURE 35

FIG. 35. Outer layer consolidated; inner pseudo-cellular. Whether looked at from above or below, Langhan's cellule nuclei seem inclined inwards away from the center of pseudo-cellule space, toward the stroma connective tissue of the villus. (1) Empty space, as though its nucleus is just entering into elongated blood-space vessel. (2) Other nuclei entering same vessel. (3) No

endothelium in any of the blood-space vessels. (5) Note with hand glass, Langhan's nuclei-cellules in various forms, with multinucleoli, suggestive of division and multiplication; one neonat nucleus cellule for every nucleolus. On the whole, nuclear wandering into blood-space and vessel very plain and clear; showing development of the primal white blood circulation.

ANOTHER VILLUS CROSS SECTION OF THIS 3-4TH WEEK OVUM

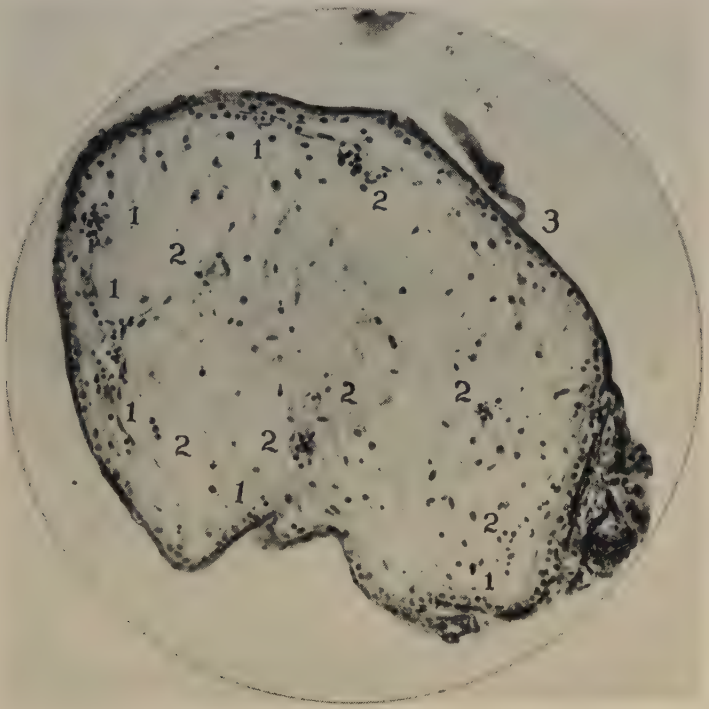


FIGURE 36

FIG. 36. (1) Nuclear inwandering into blood-space and vessel very apparent, touching inner row layer. (2) Nucleus wandering in villus stroma into blood-space vessel. Here is another illustration showing the close approximation of the blood-space vessel to even the outer margin of the syncytium, favoring entrance of the Langhan's cellule into the vessel. In 33 (1)-41 (1)-43 (1) note blood cellulettes entering blood vessel for differentiation. In Fig. 29 N.E. of (3) blood island at 3-4th week, near syncytium, are seen several of these unstained cellulettes. Easily unobserved—skipped.

METANEPHROS

FIG. 37. Enlargement of metanephros. Interest here is to ascertain if the blood corpuscles of the embryo are of similar character and form as those of the extra embryo. Similar throughout; blood cells of Langhan's cellule type seen clearly in vessel spaces between acini. All multinucleolated nucleus-blood-cells, 3.5 to 4 m. in diameter, without surrounding cytoplasm; all still of the primal white or uncolored blood circulation. Now contrast these blood cellules with the plainly and clearly outlined, mononucleated blood cells, the erythroblast, 7.5 to 17.5 m. in diameter, the blood cell of the subsequent first red blood

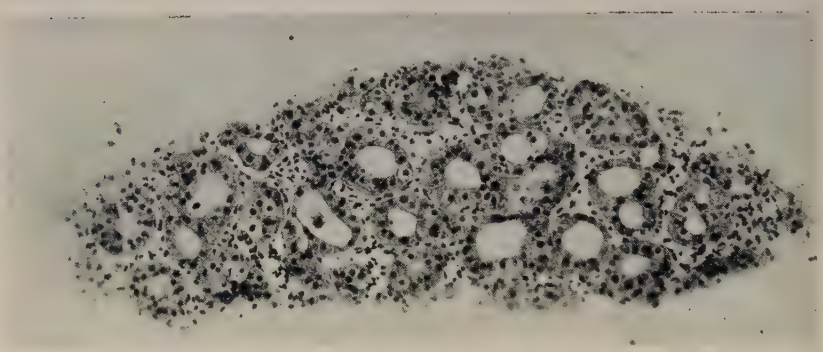


FIGURE 37

circulation; a cell with a single nucleus surrounded by its distinct cytoplasm, as in a technical cell. See Figs. 39-43-44-45—compare with Fig. 41. Then too, it will be remembered, in this comparison, that all these structures in these specimen were subject to a like staining technique. It also fixes again, without controversy that the red erythroblast is secondary, not primary, in blood cell rank; it not being of primal blood cell origin. The contrary has been and is still maintained that the erythroblast is primal.

The thought might occur here, are cell pictures in the embryo different than those extra-embryo. Decidedly so. All the cells of the embryo are mature, differentiated now and fixed, those of the extra-embryo continue as immature as before. Exception to this observation is the white blood circulation, where corpuscles are still of syncytial Langhan's cellule type and continue so to the 5-6th week; for they are still without hematin, hence white circulation. And this is proven in observing the blood spaces between the acini where the type is still Langhan's cellule. In the acini are seen particularly, the large cuboidal epithelial cells lining the acini; 3-4th week.

Would not all this suggest that mature differentiation of Langhan's cellules, as nutrient material, is a matter entirely intra-embryo?

LANGHAN'S CELLULE; CELLULE OR CELL

Before leaving these illustrations showing so beautiful pseudo or non-cell formation of the Langhan's cellules in the syncytia. Every where there is cell appearance. But regard carefully the nucleus and one sees the nucleus as though developing separately, as though apart from a cell expression, in a clear space, surrounded by a clear halo. Clarity grows as the nucleus is approached, such clarity seemingly like that of the clarity of the villus and chorionic stroma; the dark density between the cellules and surrounding them is continuous with that of the darker plasm of the outer row. The interval between the nuclei is still dark but wanes in amount as stroma of villus is approached. This is interpreted as nuclear circular digestion of the nuclei upon the compound plasm of their syncytia, the peripheral villus stroma plus the absorbed nutrient pabula, the Langhan's cellule digestive action on their environment. In the true cell as in an epithelial cell, the nucleus is in the center of the cell, as a rule, with density of plasm marked from within outwards, not clarity. Epithelial and other cells give the appearance of pan-cellular fixity, and especially its nucleus within its cytoplasm, dead or alive.

Observe the many Langhan's cellules wandering in the stroma; in blood vessels; nucleus cellules only; see Figs. 20-29-32-33-34-35-37-39-41-43-45-49.

Observe all these syncytia and their Langhan's cellules. Notice how loosely they all seem in their fixity; all seem ready to wander inwardly from their primal position in their syncytium into blood spaces, blood vessels and the stroma of villus and chorion. In all these syncytia the principle of conduct is:

1. A compound syncytial plasm darkest on the outer aspect.

2. Nuclei causing clarity from the darkest outer row to the pure clarity of the stroma.

3. Attributed to the digestive functions of the Langhan's cellules.

4. The dark Langhan's cellule interval grows less and less as stroma is neared; digestion being greater in inner second row, for outer row nuclei have other functions. See especially Figs. 32-33-34-35.

5. Proliferation and multiplication is continued in syncytia, stroma and blood space and vessel.

6. In Fig. 45 the nuclei seem just hanging in syncytial inner edge as though eager to wander away. See also Fig. 34.

7. The manner of proliferation is shown in the nucleus of Fig. 45 (2) showing subtle cellulette beaded chain in the N.W. border of cellule. In Fig. 49 is another instance.

8. Proliferation and multiplication is seen throughout all tissues, even in the White Blood Circulation.

9. The vacuolated interval left by the nucleus wandering is soon closed up, as seen in syncytia here as would be true in a cellule wandering in such a semi-solid gelatinous medium. All these phenomena are common expressions; especially in Figs. 32-33-34-35-36-45 and 49.

10. The blood corpuscles of the White or Uncolored Blood Circulation, until the 5th-6th week, is made up of Langhan's cellules, type, as a rule.

In confirmation or corroboration of these phenomena and findings see Fig. 53, where nuclear form of the syncytia is shown in its original form at term. Figure by Schaper of Harvard.

Attention is again directed to the fact that here like in almost all Langhan's cellule illustrations, the Langhan's cellule plasm seems a solid block of stain; the strong affinity of the stain for the plasm is cause of same. This blots out the delicate intricacies of the Langhan cellule. Fig. 1 shows the Langhan's cellule in its correct form. Nucleus only — not cell.

Cross Section of 5-6th Week Ovum

Fig. 38. Decidua-Compacta, Spongiosa, Vera; Syncytial Langhan's Nucleoli invade all maternal strata and tissues, find them in lumen of blood vessels and glands as well as throughout interstices of the placenta and of the decidual connective and the decidual large cells; easy of entrance into maternal circulations. In the interpretations of 1902, it was suggested that just these cellulette-nucleoli in function throughout the maternal circulations and tissues, was a cause or one of causes of the many metamorphoses, characteristic of pregnancy, psychoses, intolerable itching, breasts, nausea, vomiting, kidney reaction, eclampsiae, etc., among other things due to chemico-physioligical qualities and irritation. (1) is chorion (2) clearing house, collecting blood sinus of cord, large majority of blood corpuscles still coarse, uncolored, multinucleolated Langhan's cellule in character. (3) Cord, majority still uncolored, a few erythroblasts in the three umbilical vessels. No endothelium, only hardened edge; chorion here not yet fused with amnion. Cord also.

FIGURE 38

SYNCYTIUM, CHORIONIC STROMA WITH LANGHAN'S CELLULE WANDERING BLOOD-SPACE WITH CORPUSCLES AND ERYTHROBLAST

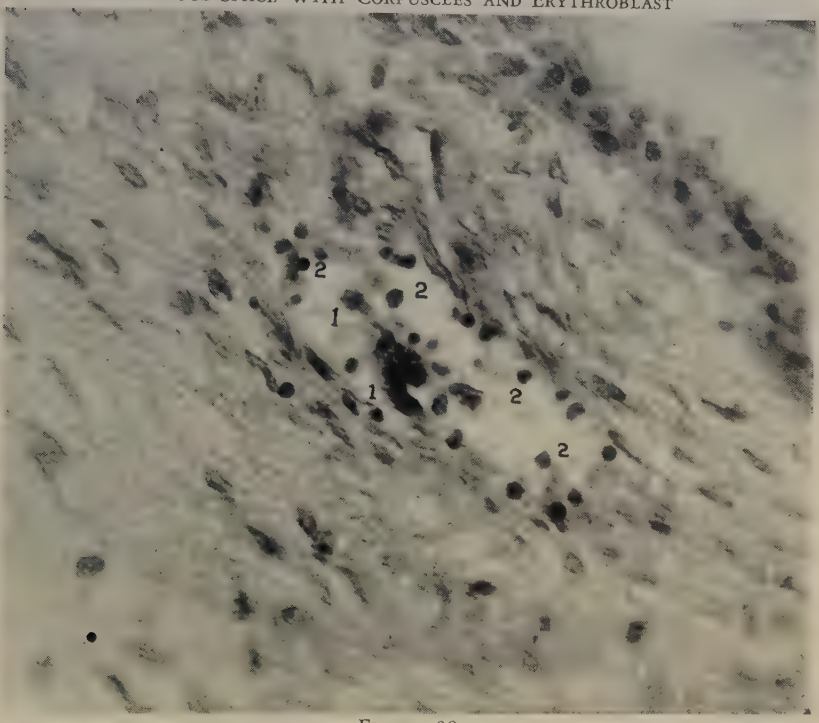


FIGURE 39

FIG. 39. Small blood-space vessel of chorion, above and to right of sinus, majority corpuscles still Langhan's cell in type, one large erythroblast, 17.5 m. in diameter. Note contrast between perfect cell type of erythroblast and those of the non-cell type of the inwandered syncytial nuclei, 3.5 m., at edge of vessel while still in connective tissue stroma. Definite contrast is very plain. Note cellules of syncytium.

HEAD OF CORD, 5-6TH WEEK

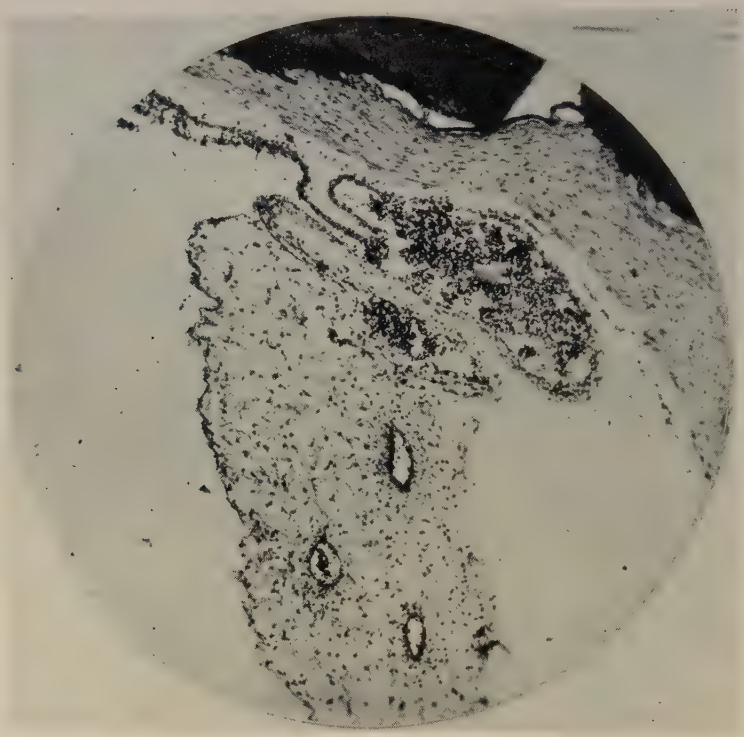


FIGURE 40

FIG. 40. Head of cord caput, clearing house, blood sinus; majority of blood corpuscles are again coarse, uncolored, multinucleolated blood nuclei, a few seem to have a commencing surrounding cell cytoplasm, as though initial hematinization and differentiation toward erythroblast. Two arteries, one vein; there are no outstanding erythroblasts in these three vessels, but in other slides these vessels hold well developed red erythroblasts. No fusion of amnion with cord.

AMPLIFICATION OF THE HEAD OF CORD

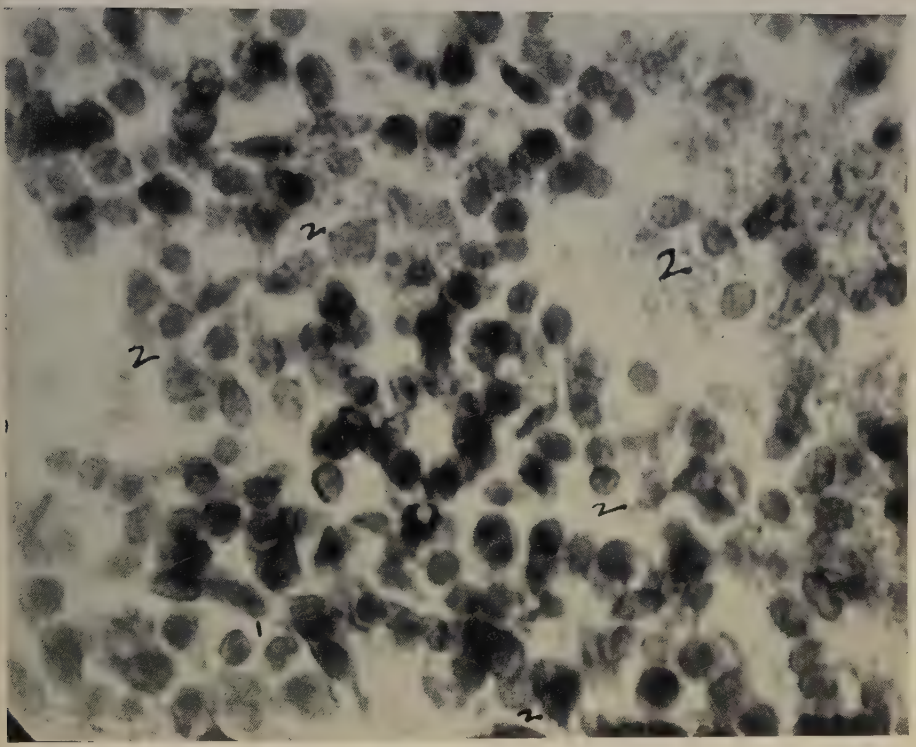


FIGURE 41

FIG. 41. Enlargement of blood nuclei in large sinus in head of cord 5-6th week; compare with nuclei of syncytium and stroma and in other illustrations; all same type, at (1) is the blood cellulette triangular cluster. At (2) the type seemed to be similar to (2) in Fig. 5. (2) the medium or transitional type of cellule, normal and cancer; this type of cell is very common in cancer; see especially Dr. Lewis' illustration of the carcinoids Fig. 4—also 65. At (2) again is a maple leaf large cell seemingly with vacuoles and cellulettes. The same figure of cellule is seen in carcinoid cancer Fig. 64 (5), below. Use good hand glass. These blood cellulettes here and in Figs. 31 (1)-41 (1)-43, raise the question as to the accuracy as to the origin of the blood platalettes; are they also blood cellulettes of large blood cell origin?

UMBILICAL ARTERY

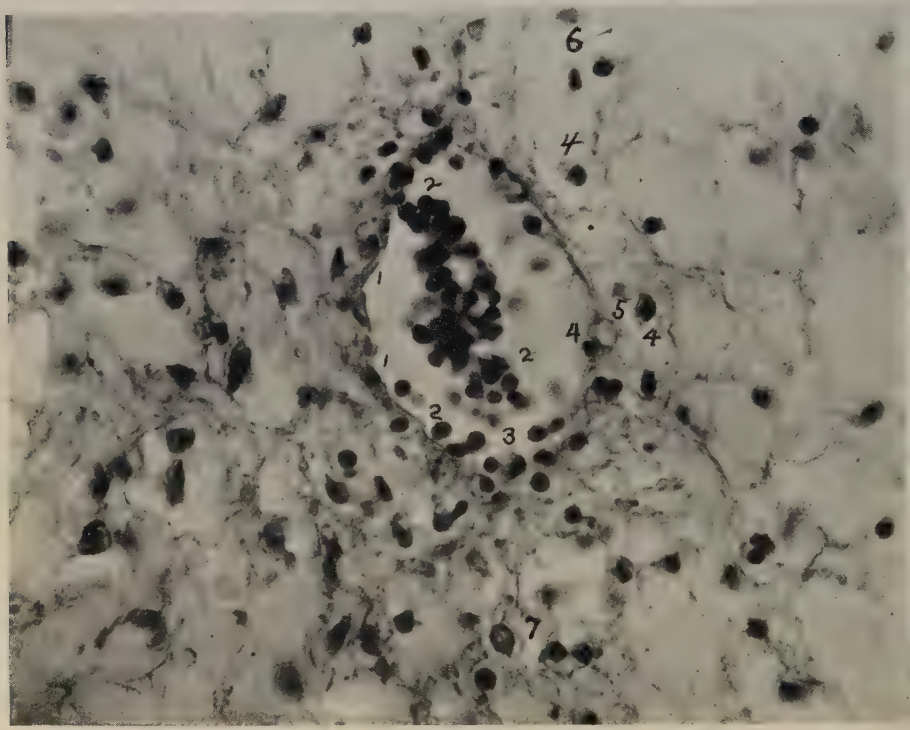


FIGURE 42

FIG. 42. Enlargement of umbilical cord artery. Margins (1) still no endothelium; (2) corpuscles same type as in Fig. 41, uncolored multinucleolated nucleus-blood-corpuscles, Langhan's type. (2) Endopedesis. (3) Of stroma-inwandering nuclei; some slight stroma (4) attached to cellules, but is freed on entering vessel lumen; blood plasm clear and transparent. Note empty circular spaces (5), suggestive of departure of an inwandered nucleus and of an outline just caught by post mortem changes and hardening effects of laboratory media. All this area, when first studied seemed profusely sprinkled with disseminated minute small vesicles, as in Fig. 5 (5), later referred to as cellulettes. There was but one conclusion and that was that such cellules as (7) proliferated these minute cellulettes; for upon pressure with barrel of microscope showed many cellulettes from under cover glass, returning under glass cover when pressure was released. Several years after, wanting to clear up this question and restudy this slide, found the multitude of cellulettes had entirely disappeared as though evanescent, not permanent. Likewise pressure on (7) elicited nothing.

In the next illustration, Fig. 43, two of these blood cellulettes are still to be seen in the S.E. lower rim of blood vessel, attached to small blood corpuscle in lumen, undergoing further blood cell differentiation. Note that the trend of all these cellules is to enter the blood vessel for further differentiation. Conduct of these cellules is migration and endopedesis of cellule into blood vessels and

lends explanation to the theory of corpuscle origin from the endothelium of the blood vessel. Yet here there is no endothelium nor center of blood corpuscle proliferation suggesting such an origin. Notice in these illustrations there seems a general absence of endothelium, in these blood vessels, but an endopedesis of cellules from the stroma.

ENLARGEMENT OF UMBILICAL VEIN

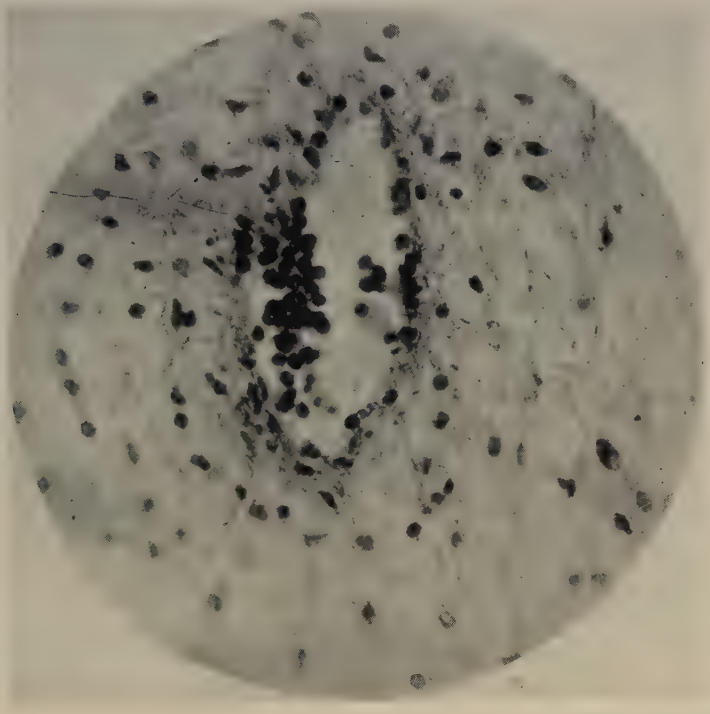


FIGURE 43

FIG. 43. This period of 5-6th week seems a period of transition from the coarse uncolored multinucleolated blood corpuscles, Langhan's cellule type, to the smoother red colored erythroblast. In the just previous illustration and in that of the blood corpuscle picture of the sinus at the head of the cord, it was remarked that no erythroblasts are found therein, showing the comparative scarcity of the erythroblast at this time, mid so vast numbers of the coarse uncolored multinucleolated blood corpuscles. Again note the differences in construction and form between the two differing blood corpuscles.

In the S.E. margin of the rim of this vein is seen a small cellule headed toward blood corpuscle differentiation with two cellulettes between it and the wall. These cellulettes are like those spoken of as distributed among the stroma like a great dissemination of minute seeds. These two cellulettes seem of a more mature growth for they seem more permanent though not taking the stain. Note again no endothelium and that the somatic cellules are of Langhan's cellule type crowding into the blood vessel. The cytoplasm of the erythroblasts is very apparent; were there any around the Langhan's cellule type it would also appear as readily.

Blood Vessels From Cross Section of Villus, 7-8th Week.
To Show Well Developed Erythroblasts (1),
Direct Parent of the Erythrocyte.

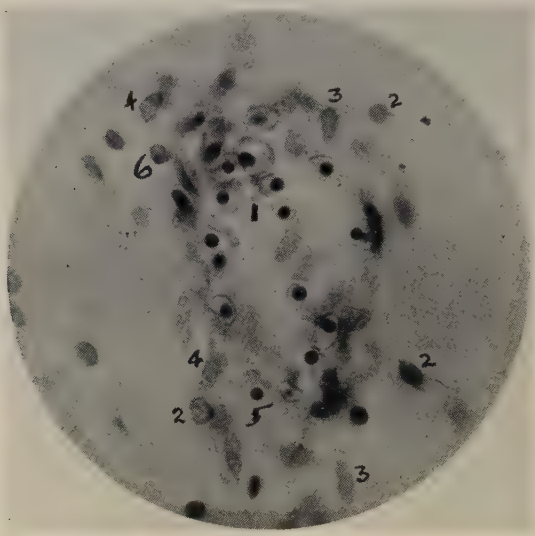


Figure 44

Fig. 44. Observe division of multinucleolated Langhan's type, still in stroma connective tissue of villus, just without the vessel rim; round (1) erythroblasts; (2) and (3) elongated nuclei, also kidney-shaped form at (4) showing loss of straight outline, as though about to break up into several nucleoli offspring, though still loosely clinging together. (5) Cup shaped crescent erythroblast with nucleus; drop the nucleus and there is left the pure based crescent cup-shaped erythrocyte. (6) Another type similar to the medium or transitional type of Langhan's cellule. See 5 (2) and often in carcinoids and cancers.

Cross Section of Blood Vessel From Villus, (15)
Near Attached Villus to Decidua, Described
In Fig. 14 (15) Here.
Note Cellule (2) Especially

Fig. 45. Beautiful syncytium showing density of syncytium greatest from without inwards; double row cellules digesting compound syncytial plasm, the peripheral villus plasm plus the absorbed pabula from Langhan's cellule conduct; movability of nucleus and wandering of the Langhan's cellule leaving small empty nuclear space only, again is proof that the Langhan's cellule is a cellule, sui generis, of a cellule type with wholly different origin and function than the maturer later epithelium. Vessel margin, no endothelium; contents mono-nucleated erythroblasts. (1) Large second row nucleus wandering into blood-space vessel; with large hand glass, this nucleus appears to have several cellulettes as though ready to break up into several offspring. (2) Note second row nuclei seem directed inward toward stroma villus, especially at (2); showing principle of direction and activity. (3) Empty spaces suggesting departed nuclei. (4) Empty space with nucleus just below; nucleus appears to be dividing into two offspring. (5) Large nucleus-cellule about to divide. Cellules with apparent surrounding plasm in stroma of villus not erythroblasts;

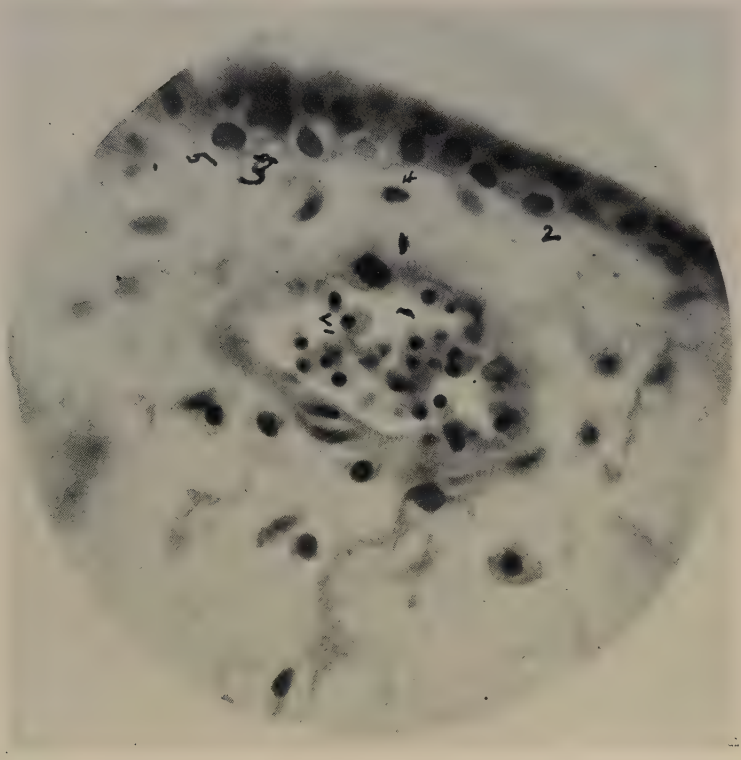


FIGURE 45

syncytial type with stroma plasm surrounding. This is lost upon entering the lumen of blood vessel for further blood cell differentiation. Grosser mentions this cellule as the Hoffbauer cell, attributing a moisture carrying function to it.

Referring to the nucleus-cellule again. This nucleus-cellule above (2); good hand-glass power yields faint beaded formation along North and West border of cellule, showing characteristic cellulette formation; see also Fig. 5 (2) (5) and Fig. 49 for normal and Fig. 8 (2) for cancer; also it shows an amitotic form of cellule division. A very important finding, showing continued source of cellulette proliferation, and throughout Langhan's cellule expression. And just here a recollection. Is this cellule, Langhan's proliferation, the source of the immense proliferation of small cellulettes, later small blood cells, formerly spoken of as a round cell exudate, fibroblasts? that make up the great quantities of blood and plasm cells thrown out in the restorative processes following great losses of blood and energy from lacerated wounds; hemorrhages; loss of blood from gun-shot wounds and otherwise as burns, tuberculosis, etc. Pathology has not been able to determine the, its source. Medulla; but that is perhaps only a center for factoring. Here in this cellule and others, at 7-8th week of growth, is revealed an expression of continued cellulette formation and is the same as seen in the earliest times of cellule and cell genesis.

How easy this feature of this (2) cellule and others could be overlooked or not discovered. This feature, as mentioned, shows how elementary proliferation arises and continues throughout all life, pre- and post-natal life and accounts for the proliferation of the Langhan's cellules, the wandering cellules of post-natal life, with all their primal potentialities. To the writer this seems a splendid discovery, or, if it has been mentioned by other workers, it is a great confirmation.

For it certainly dispels the mystery so long observed of the wonderful emergency proliferation of blood and plasm cells in cases marked by great loss of blood. This cellulette expression is again seen in the inner row of the Langhan's cellule lining of the syncytium in Fig. 49, as directed there, in a cellule to the right of the erythroblast marked (1); the cellule showing a characteristic feature of cellulette formation; its vacuoles also.

As mentioned this cellulette feature of the Langhan cellule continues throughout life, from primal times on. In the body of this article is shown the Langhan's cellulettes; the blood cellulettes (are the blood platalettes really blood cellulettes as demonstrated in this article); and later the cancer cellulettes. The more one considers this cellulette feature, the more widely appears explanation for now unexplained structural features of cells, tissues and tumors.

ANOTHER SLIDE OF CHORIONIC SAC AND PLACENTAL DEVELOPMENT, 7-8TH WEEK

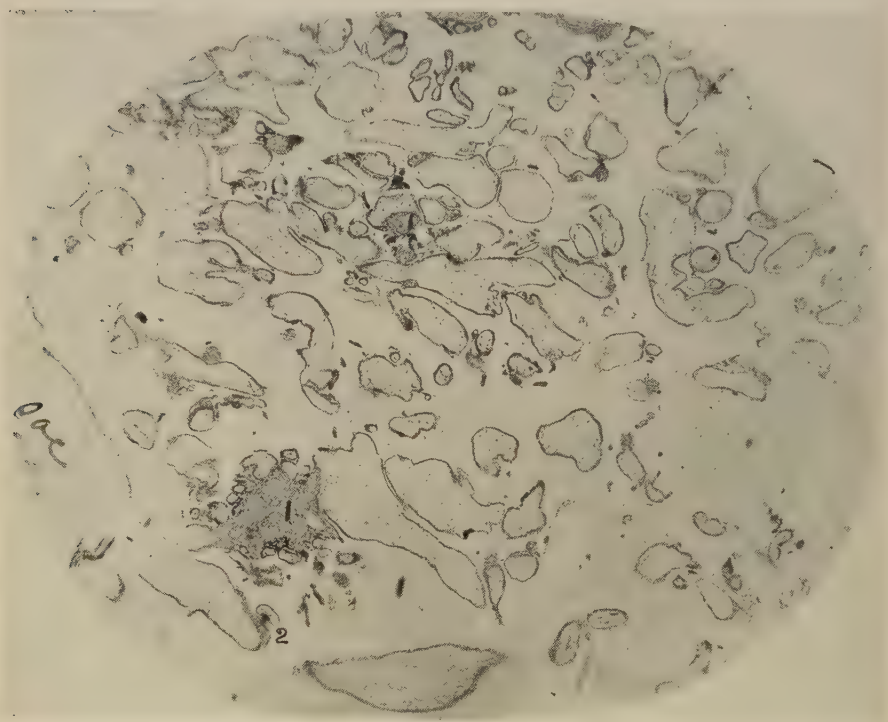


FIGURE 46

Fig. 46. To show better: (1) the intervillus supporting tissue, a type of syncytial proliferation, here in the great fluid medium, whereas the trophoblast is its analogue in the solid tissues; both disappear by lysis as pregnancy advances. (2) Note budding, the duck's beak form, at end of apex of sac. See Fig. 21 (2) (3) (6).

Enlargement of Duck's Beak Form

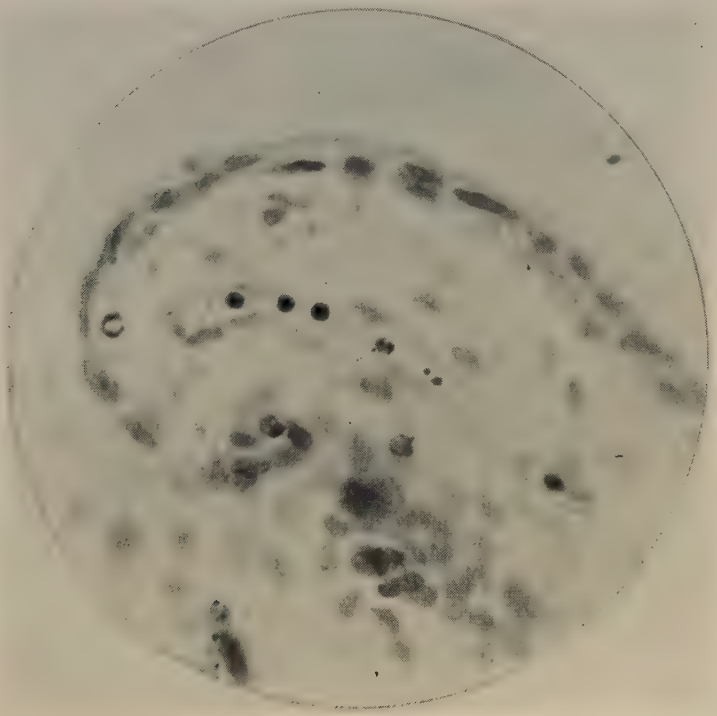


Figure 47

Fig. 47. Syncytial double row nuclei shown very nicely. Observe with good hand glass. Intravessel division. Vessel lumen terminal in close approximation to second row; to the left three mature red erythroblasts; to the right another large, mature erythroblast; between them a cluster of smaller nuclei and two smaller nuclei, already showing a small enveloping blood corpuscle plasm. Note all cellules for comparisons.

ENLARGEMENT OF INTER-VILLUS TISSUE, FIG. 46,
NEAR APEX OF CHORIONIC SAC.

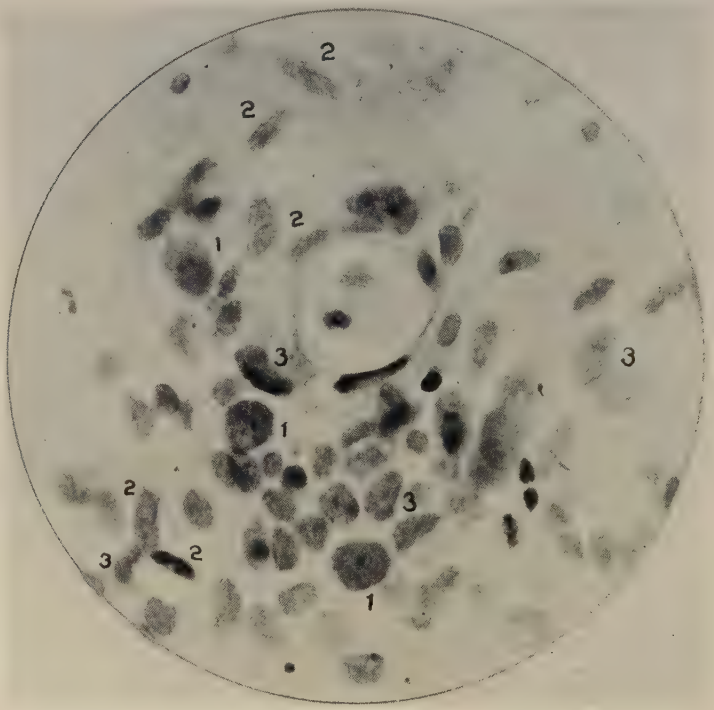


FIGURE 48

FIG. 48. Beautifully and clearly showing types of adolescing uncolored, multinucleolated Langhan's cellules, all sizes; (1) the rounded; (2) the elongated, showing stage just before division into 2, 3, or more neonat offspring. This Langhan's nuclei illustration especially valuable for its clearness of detail of form of outer wall uncut structures of the here uncolored nuclei. (1) The large round spinal form, first stage of division. (2) The elongated spindle-shaped form, second stage of division. (3) The Kidney form, just before breaking up into several offspring, yet loosely attached to one another. In Figs. 1 and 3 cellules seem vacuolated, vacuoles through which the cellulettes are extruded, before cellule breaking up. To the right of large cellule below (1), faint outlines of a triangular cluster of cellulettes.

AMPLIFICATION OF LARGE BLOOD VESSEL IN CHORION, 7-8TH WEEK.

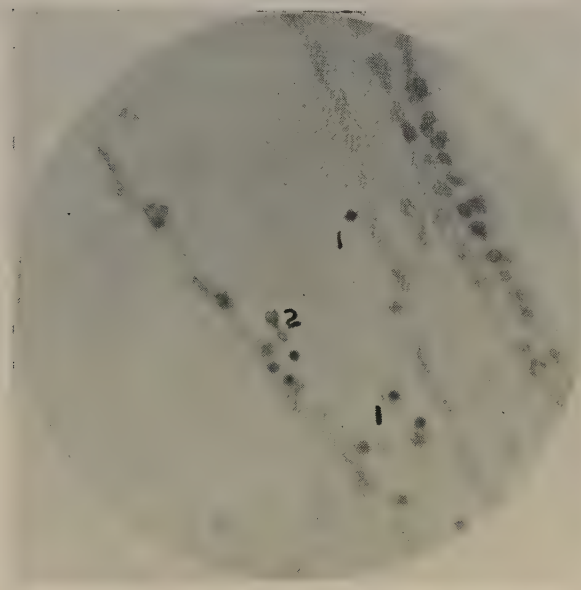


FIGURE 49

FIG. 49. (1) Large erythroblasts. (2) Bell-shaped division. Note Langhan's cellules in double row margin; no cell picture, only multinucleolated nuclei-cellules. To the right of (1) above in the syncytium, the second cellule in the Langhan's row with good hand glass shows cellulette formation. See Figs. 45 (2) and 8 (2).

ANOTHER VESSEL FROM THIS CHORIONIC AREA

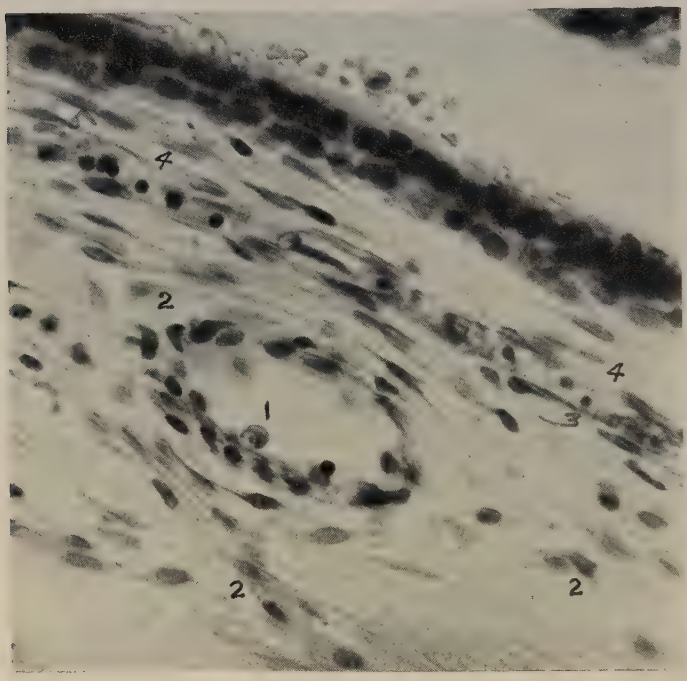


FIGURE 50

FIG. 50. (1) The normal non-nucleated form of erythrocyte, found in another blood vessel of the chorion of a 7-8th week ovum; another type of intra-blood-vessel differentiation. Note the delicate nucleus, apparently just extruded into the hollow of the crescent. Note all the cellules here, syncytium, stromal cellules, and vessel cellules, all Langhan's cellule type; observe also erythroblasts in elongated blood space. (2) The spindle-shaped cellule. Above (4) to the left another well outlined spindle cellule.

BLOOD VESSEL RIM IN FIG. 50, ENLARGED

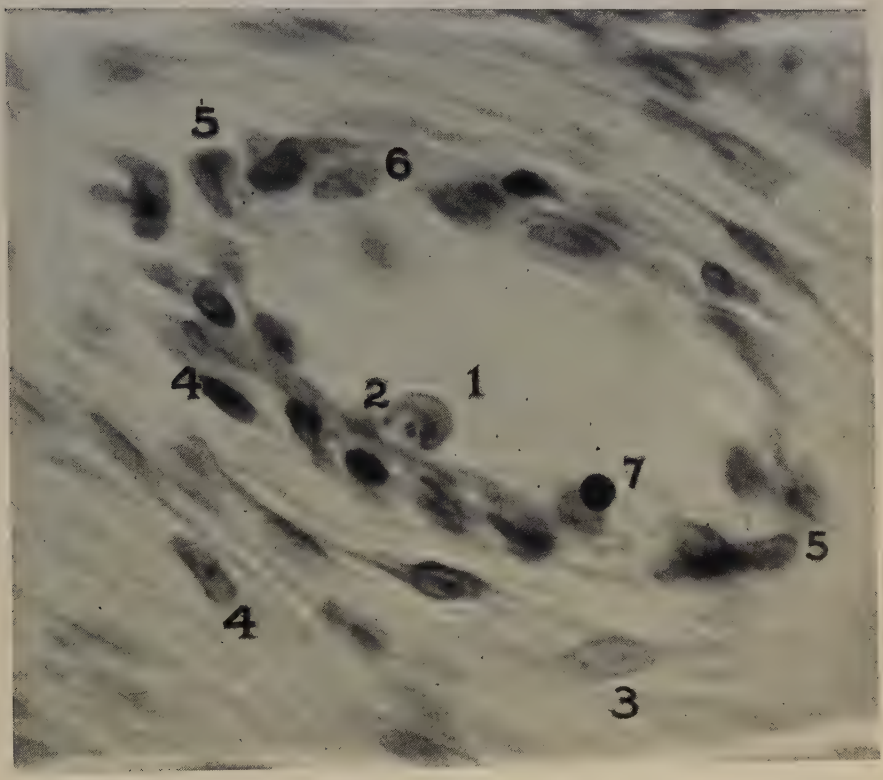


FIGURE 51

FIG. 51. Note all cellules are still Langhan's cellule in type. Cellules 2, 3, 4, 5, 6 all appear to be spindle-shaped multinucleolated; especially 3 and 4. The appearance of these cells entering the lumen of the vessel through the rim of the vessel again lends explanation to the theory formerly held, even now, that blood corpuscles originate in endothelium proliferation; which is error. See Fig. 6 (3); in cancer, Figs. 36-37 in supplement.

REMAK'S DIRECT DIVISION

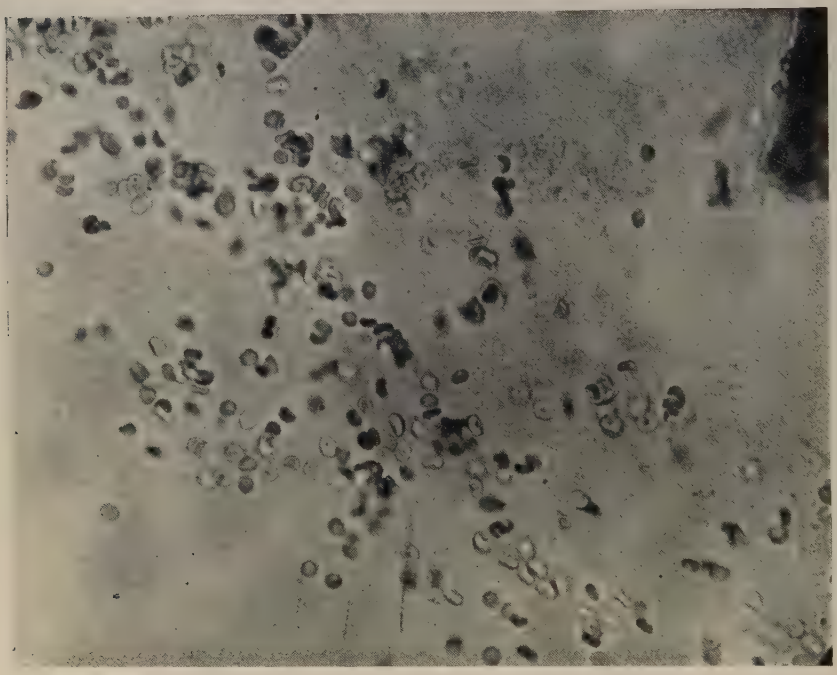


FIGURE 52

FIG. 52. Direct division, amitosis in blood cell differentiation; doubted at one time. Two unfinished bi-nucleated red blood corpuscles. Another cluster from this area vasculosa, 7-8th week, showing predominant finished neonat erythrocytes and an exceptional bi-nucleation yet unfinished. In the fresh specimen there was a marked suggestion of division into two offspring. Another smaller bi-nucleated above. When cleavage occurs upon extrusion of the nuclei there results the mature finished non-nucleated red blood corpuscle, the erythrocyte.

FINAL SYNCYTIUM AND SYNCYTIAL NUCLEI, LANGHAN'S CELLULES, PRIMAL CELLULES AT TERM

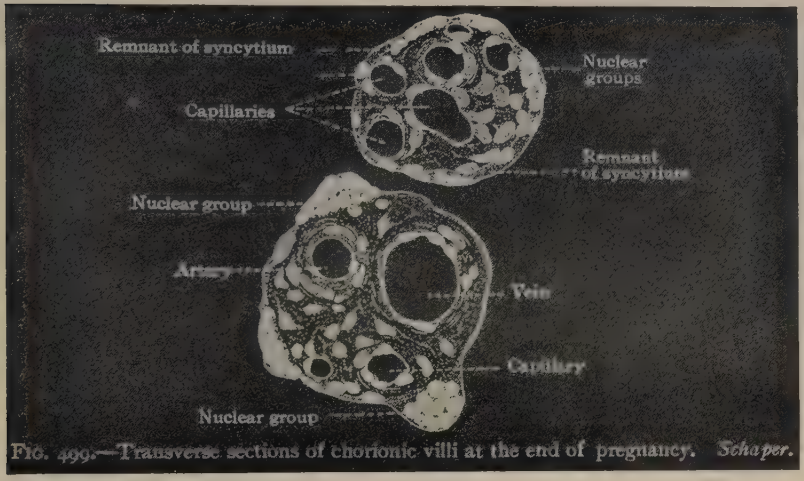


FIGURE 53

FIG. 53. Note same nucleus cellule form and structure with multinucleoli but without limiting surrounding cytoplasm, as in a mature epithelial cell. In form, structure and potential powers true to primal ancestors, the primal matrix multinucleolated nucleus-cellules, the Langhan's cellule of primal syncytium. This illustration should put an end forever to the thought that Langhan's cellules are destroyed or disappear. They continue efficacious throughout post-natal life, they being inherited like all other cells in post-natal life from the pre-natal body.

Additional Cancer Illustrations

Syncytioma Pulmonary

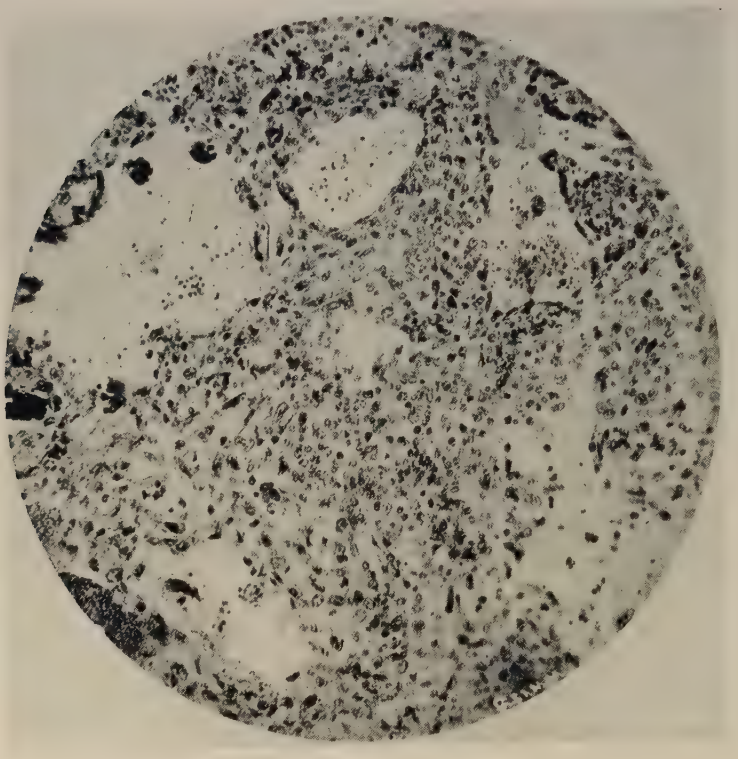


Figure 54

Fig. 54. En gros illustration of a syncytioma metastatic in the lungs from a uterine syncytioma. Fig. 8 in previous pages is an enlargement of a small particle of this specimen. Please refer to same for detail description.

NEUROBLASTOMA

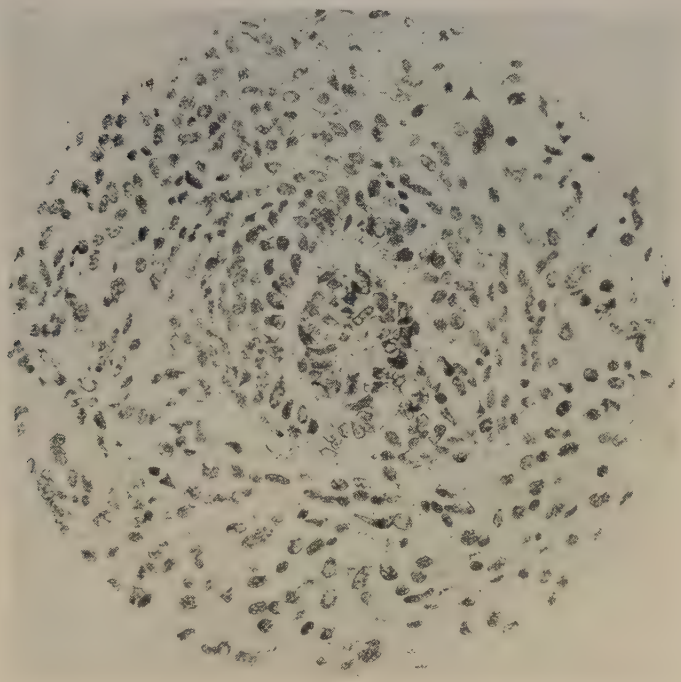


FIGURE 55

FIG. 55. Illustration showing beautifully all forms of the cancer cytology. Shows again this rarer form of the long narrow band link-chain infant cancer cellule cluster, here running through the center of this neuroblastoma. This plate made from illustration 512, page 965, Dr. W. G. MacCallum, Pathology, Johns Hopkins, 1928, Saunders and Co.

CANCER METASTASIS TO LIVER

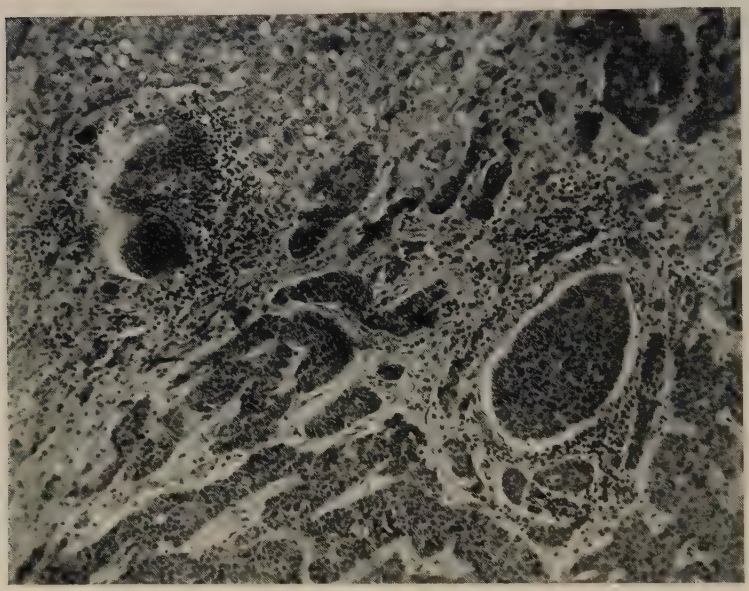


FIGURE 56

FIG. 56. Shows manner in which the metastases to the liver are caused by the invasion and dissemination of the cancer cellulettes and cellules; also how parenchymatous liver epithelial cells and tissues are rapidly being amoeboided by the cancer cellules, and its tissues replaced by specific cancer tissue. It is easy to conceive that there is a time when the cancer invasion is so small that an incipient condition of cancer is induced—but now confirmed. To note normal type of proliferation, see Figs. 18 and 19, (3) (5).

Just here the question again presents itself. Why does cancer seem to choose the lymphatic system as channel for primary dissemination of cancer, more especially. Is there a principal or hormone favorable to such cancer cellule transmission in the lymphatic system? Would it follow that other systems of dissemination seem to present a form of antagonism to such cancer dissemination in its infancy. Cancer dissemination, metastatic, seems characteristically along lymphatic lines, as lymph nodules, toward favorite centers as peritoneum, liver, lung, etc.; not general in its effect.

GLIOMA

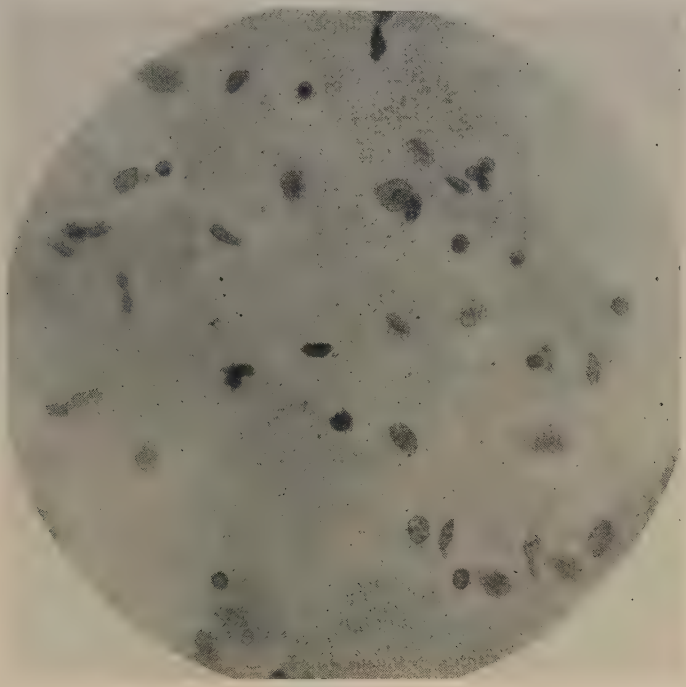


FIGURE 57

FIG. 57. Pick out forms of cancer cellules from this case of Glioma.

GLIOMA

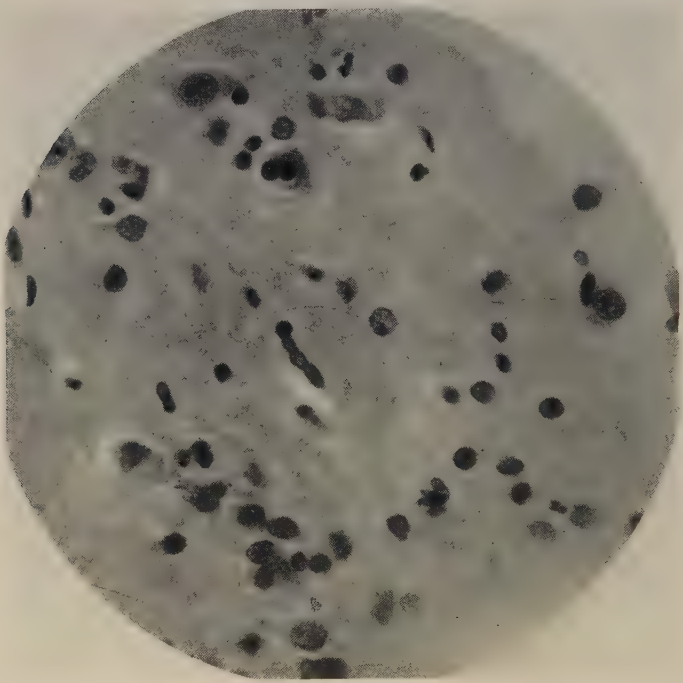


FIGURE 58

FIG. 58. Two different slides from a glioma. All forms of cancer cytology seen here. Remarkably alike here to their prototype in the normal cytology. (1) The small cancer cellule. (2) The medium or transitional cancer cellule. (3) The large cancer cellule. (4) The spindle-shaped cellule. (5) The elongated cancer cellule cluster. (6) Cancer cellulette is seen in nucleoli of the cancer cellules; missing only, the triangular cluster.

LIP CANCER

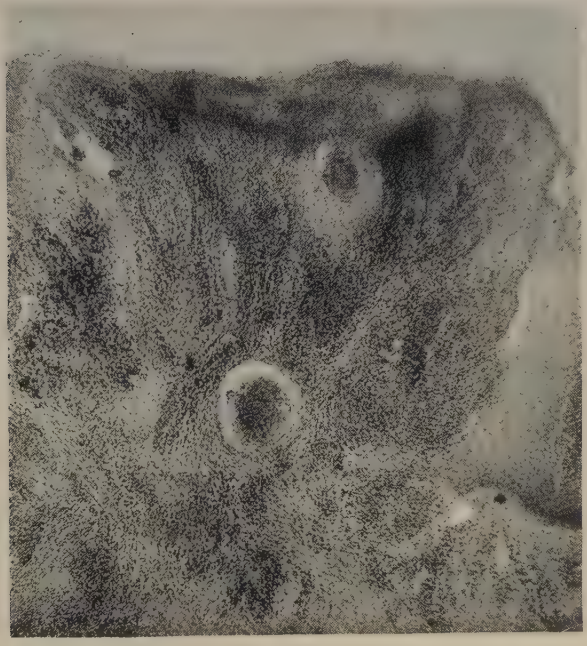


FIGURE 59

FIG. 59. Lip cancer, general view; laterally cancer columns bounding quadrant of succumbing normal squamous tissues; two pearls; necrosis.

LIP CANCER (CONTINUED)

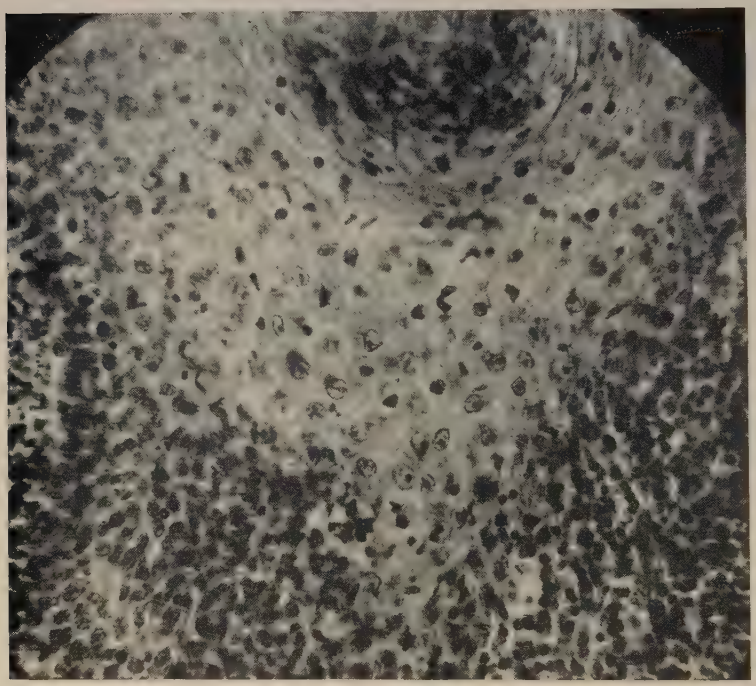


FIGURE 60

FIG. 60. Normal area above; about lower part of upper pearl; enlarged. To show contrast between normal squamous cell tissues rapidly fading and replaced by invading cancer tissue; a beautiful case illustrating the amoeboid conduct of cancer cellules. Compare normal squamous cells, rapidly disappearing because of this amoeboid cancer process, with cancer cellules best seen in lower left corner of this illustration. All forms of cancer cellules to be seen from the cellulette up.

Note how different is the epithelial cell, in structure, form and appearance from the cancer cellule. The cancer cellule runs true and identical to its ancestor mater cellule, the primal matrix embryonic cellule, Fig. 1, in form and structure; the epithelial cell is a far maturer picture and differs very materially from the primal immature cellules and the cancer cellule. Epithelium transmutation would be wholly different in cell form and structure and retrogressive. Nowhere in epithelial division or offspring is there such a form as an "atypical epithelial proliferation." The cancer cellule is identical with its mater, the primal cellule; as mentioned the cancer cellule is somewhat coarser in structure and appearance. Transmutation cytology would be entirely different from its mater cytology.

LIP CANCER (FINAL)

FIGURE 61

FIG. 61. Introduced here as an enlargement and in further proof of great differences between the squamous cells and those of the cancer cellules; the squamous tissues here are made up of large epithelial cells, mononucleated with prominent nucleolus, Fig. 61 (1) and with a surrounding cell cytoplasm. Here no evidences whatever of epithelial proliferation, rather degeneration and death. How different the active growth proliferation of the cancer cellule.

The normal squamous cells enlarged, the better to show contrast with the cancer cellules. Observe perfect cell outline of squamous cells, a single nucleolus with a nucleus surrounded by a characteristic cytoplasm (1); also note their fixed regular compact form in tissue structure. On the other hand, observe the cancer cellule, Fig. 60; it is multinucleolated without surrounding cytoplasm, free as a rover cellule, loose, not in compact structural form as in the normal

epithelial squamous tissues. Epithelium is a mature form of cell evolution; cancer cellule, immature. The size of the cancer cellule altogether is about the same size as the nucleus alone of the normal squamous epithelial cell. Squamous Epithelioma is error as cancer nomenclature. This term refers to the locus of the cancer process; but not as to the origin and nature of the cancer process, the ens malignitatis, the cancer cellule. Cancer is not epithelial. Here is splendid opportunity to compare epithelial cells and cancer cellule and convince oneself that cancer is not epithelial and that epithelium, in death, does not rise again and consume its own remains to flourish as "atypical epithelial proliferation."

Metastatic Lymph-Nodule, Early

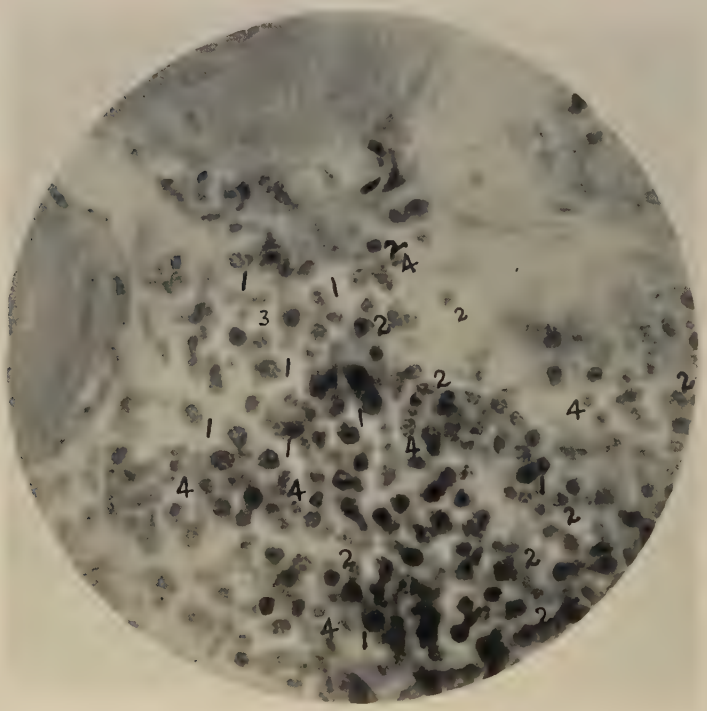


Figure 62

Fig. 62. Cancer cellules from a metastatic lymph nodule; no surrounding limiting cytoplasm. Beautiful clear illustration showing Amitosis, Direct Division, in the cancer cellules. Amitosis common in occurrence in cancer; no room for doubt as to the occurrence of this form of cell division. (1) Large round cellule with multiple nucleoli. (2) Large round cellule extruding cellulettes, singly and in clusters, now cellulettes, soon neo-small round cellules. (3) Faint long link-cluster cellulettes, neo-small round cellules. (4) Medium round or transitional cellules, all multinucleolated without surrounding cytoplasm. Use good hand glass.

LYMPH NODULE, LATER TYPE

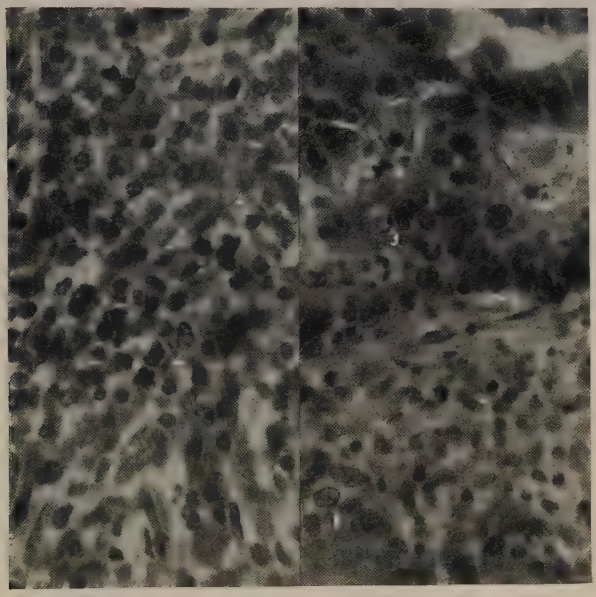


FIGURE 63

FIG. 63. Illustration shows a later, serious destruction of the stroma and parenchymatous structure of the nodule. Above still parenchyma; below and left cancerous process; all forms of cancer cytology from small cellulette and cellule to large cellule.

(1) Large round cancer cellules showing vacuoles and cellulette conditions.

(2) Cellulette condition of large round cellules midst pure cancer tissue.

(3) Medium or transitional cancer cellule here superimposed on (right) parenchymal nodular cells and tissue, undergoing amoeboidization by cancer cellules; below pure specific cancer tissue replacing destroyed nodular tissues. For normal type see Fig. 5 (2).

(4) Left view is pure specific cancer tissue; parenchymatous nodular cells and tissues wholly replaced by pure cancer tissue; at (4) large round cancer cellules undergoing amitotic division. Search for cellulettes.

DR. FORBUS' CASE 3 OF CARCINOIDS

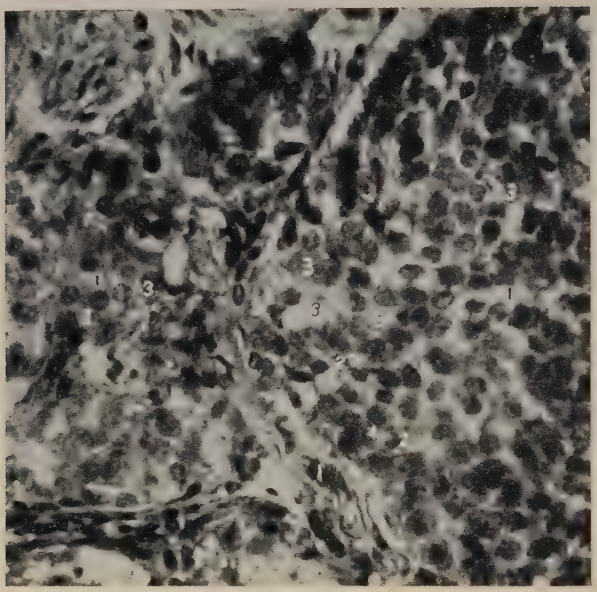


FIGURE 64

FIG. 64. Dr. Forbus' case of carcinoids. Typical carcinomatous illustration. More mature in appearance than Dr. Cullen's and Dr. Lewis' cases.

(1) Faint cellulette outlines; to be seen upon study and fixity of view and in other fields of photo.

(2) Small cancer cellule and outline of cellulettes.

(3) Cellulettes about (3) to the left. (3) Medium or transitional cancer cellules.

(4) Large round cancer cellule.

(5) Large round maple leaf form cancer cellule undergoing amitotic division; notice cellulette formation. For normal type see Fig. 41 (2); also Langhan's cellule type blood corpuscle in white blood circulation; amitotic division in blood sinus of cord at 5-6th week of growth.

DR. CULLEN'S CASE OF CARCINOIDS

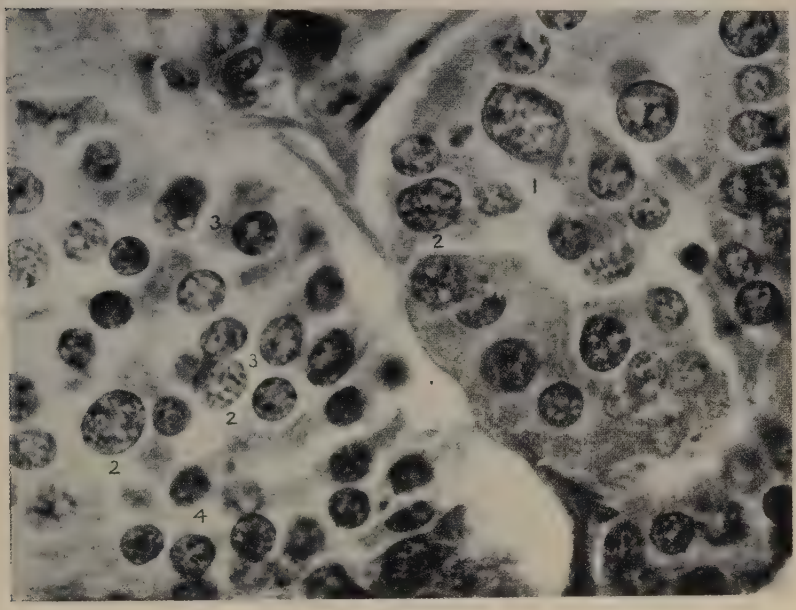


FIGURE 65

FIG. 65. "(Fig. 8, Path. No. 47648, Case 11). Oil-immersion photograph of cells of a Carcinoid of the appendix.

"In this photograph the character of the cells can be seen more plainly. The nuclei vary somewhat in size, but all are more or less round, No definite mitotic figures can be seen, but chromatin particles are abundant. The cytoplasm is quite granular and under this magnification the cell membrane is more distinct. This tumor had not metastasized. (Case of Dr. T. S. Cullen)."

Dr. Cullen's case of Carcinoids, magnification quite larger than in Dr. Forbus' case; also Dr. Lewis' case.

Cancer type seems of a younger stage in development in cancer cellules, Dr. Forbus' case seeming much maturer; destruction and replacement by cancer cellules of parenchymatous tissue, more complete. A most favorable picture for contrast; the part to the left showing a true Langhan's cancer cellule type, as only nuclei in form and size and without a distinct surrounding cytoplasm as in a cell, as an epithelial cell.

On the right the darkened solidified plasm is not cytoplastic, that is belonging to the nuclei, as in a cell surrounding plasm; but it is a parenchymatous plasm, a syncytial form of somatic stromal plasm solidified by laboratory media; the Langhan's cancer cellules in their midst amoeboiding their environment, this stromal plasm, as usual. Though a giant cell interpretation might be placed upon this right sided picture, that would be error, as the plasm is simply parenchymatous, local, disappearing by the amoeboid action of the invading cancer cellule and replaced by pure specific cancer tissue. Some authors try to sketch in a cell cytoplasm outline, especially on left side.

Analysis of Cytology

(1) Large round cancer cellule about to dissolve; divide into amitotic cellulettes.

(2) Ripening large round cancer cellules.

(3) Medium or transitional cancer cellule.

(4) Small round cancer cellule.

(5) Facet picture condition, general; leading to cellulette formation.

(6) Compare with normal Langhan's cellules, Fig. 1.

(7) Here, as throughout cancer divisions, the amitotic form seems paramount; though even today Amitosis is questioned by some authorities.

Amniotic Sac with Amorphous Fetal Mass, 3rd Month

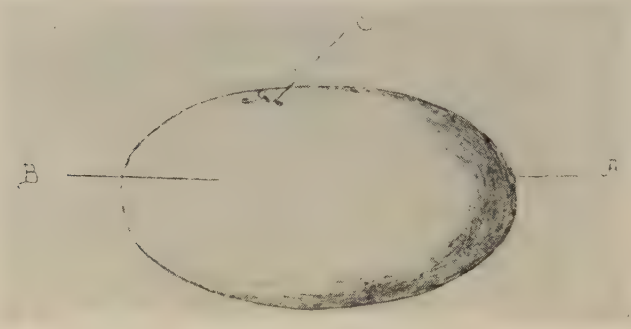


Figure 66

Fig. 66. This figure has been added here for it is of the most interesting nature concerning the early evolution of the ovum, intra-uterine of about the 3rd month. Here will develop some little difference of opinion as to this interpretation of development of the ovum and embryo. However histologic embryologic opinion explain the development of the embryo and the amnion, I have followed the suggestion shown here so explicity. That in the human the amnion is the macular membrane changed by pregnancy hormone into the amnion. The trace and embryo develop alongside the upper (or other as positioned), within the internal margin of the amnion; the macular membrane now amniotic sac having wandered from its more central position in the vittelus of the ovule-ovum to contact with the chorion to insure its source of nutrition, see Fig. 10, and there placentation will develop. This is the explanation for the steps of early evolution already mentioned by me. Whatever contention this view may meet, this pathologic ovum proves that view. The perfect amniotic sac here shows the amorphous scirrhous necrotic mass representing the degeneration of the fetus, contracted almost to the amniotic membrane and within the amnion; in its pathology its principle of origin and growth as suggested in the normal, along the lines of macular-amniotic development without intervention of the degenerative changes and replacements by other structures, more ambiguous than clear, in declared evolutionary development. No scars or other evidences of a broken development; only ordinary dry contractive scirrhous necrotic degeneration.

"Gestation, amnion, sac expelled intact from 12th week decidual cast. (a) amnion; (b) liquor amnii; (c) amorphous mass representing fetal development; abnormal development of fetus due to disease which also caused the abortion. Its nature was not ascertained.

Note here in this pathologic form of fetal amorphous backward development, as described in "Origin of Chorion, Amnion and Yolk Sac"; page 15; "the embryo trace developing above in and along the inner margin of the membrane of the gestation cyst, the macular membrane, now the amnion, etc."

"Further, among other features, this whole, unbroken, expelled by labor contractions, amniotic sac shows, is the natural tenacity and strength of the amnion per se. This feature of amnion unruptured sac, expelled with contents, is seen as is well known even at so late a period as maturity; where the almost whole unbroken amniotic sac, with mature living neonat within, is delivered unassisted and intact; where rupture of amnion is quickly and artificially induced to deliver the neonat. The common cowl is also another but more common expression of amnion tenacity. These phenomena of delivered, partial and almost complete unbroken amnion sacs, aside from marked tenacity in strength, show looseness in chorio-amniotic union. Another proof that chorion and amnion are not one of a common tissue in earliest embryonic development, as claimed by some writers."

CHART 1

A CHART SHOWING PARALLEL DIVISIONS IN THE NORMAL MATRIX EMBRYONIC CELLULE; AND DIVISIONS IN ITS ABNORMAL OFFSPRING; THE CANCER CELL.

The normal primal mutinucleolated cellule	Proliferation	1—small round cellulette
	Division	2—small round cellule
The normal embryonic cellule of the syncytium 2-8th week	Multiplication	3—medium round cellule 4—large round cellule 5—spindle or elongated cellule
1st stage of evolution	Into	6—cluster 2-3 small round cellules cling together, kidney shaped 7—cluster 4-5 small round cellules cling together in long narrow band link-chain form
Embryonic nucleus-cellule of syncytium	Proliferation then Differentiation	Where 100% growth control hormone conducts; the normal. Majority of the seven divisions of the normal embryonic cellule. They continue on to differentiate into many forms of further metamorphotic ultimates. One example, primal uncolored blood corpuscles differentiation through the erythroblast to the erythrocyte.
2nd stage of evolution	Proliferation but in many cells, further differentiation ceases and there is only proliferation; the cancer cells	Where growth control hormone conduct is aberrant or absent; the abnormal cellule and tissue. Great proliferation of these cancer cellules but no further differentiation; now forming the blighted cancer cells and tissue.

CHART 2

THE CANCER CELL.

Third stage of Evolution of Cancer Cellule	The Cancer Cellule Great Virulent Proliferation Division	1—cancer cellulette 2—small round cellule 3—medium or transitional round cellule 4—large round cellule, spinal 5—the spindle or elongated cellule
	Multiplication	6—cluster 2-3 small round cellules cling together, kidney shaped 7—cluster 4-5 small round cellules cling together in long narrow band link-chain form
	Division same as in normal first stage of primal embryonic cellule into	All these cancer forms same as those in the normal divisions

The complete Cancer cell types seen in the various forms of carcinoma (and sarcoma)	1—The cancer cellulette 2—The small round cancer cellule type 3—Medium or transitional cancer cellule type 4—The large or spinal cancer cell type 5—The spindle shaped cancer cell type 6—The cluster infant neo-cellule cancer cell type, 2-3 cling together, kidney shaped 7—Cluster, 4-5, neo-cellules cling together link-chain like, cancer cell type

Another most interesting feature here, and one not a little baffling, is the marked relationship, as suggested above, between the various forms of cancer cellule and those of the sarcoma. They are like twins, the same in form and type; both descent types from the normal embryonic cellule The sarcoma though seems to grow more rapidly and is far more virulent in character; destroys in less time.

The primal matrix ancestral normal embryonic cellule and the abnormal cancer cellule are identical primarily, and have the same origin in the syncytium. Their first stage of evolution.

Both cellules pass through their second stage of evolution, proliferation, as one in normal histologic manifestations. Their second stage of evolution.

The one cell, the normal, continues on through the second stage of evolution, proliferation, to and through its third stage of evolution, differentiation, to normal tissual ultimates. Its third stage of evolution.

The second cell, the now abnormal cancer cell, ceases normal evolution in proliferation; thereafter it exercises its intense energies in great viscous proliferation only; amoeboiding its environment; replacing it with cancer tissue; through exhaustion destroying both host and itself. Its third stage of evolution.

Supplement

Résumé illustrations of types of normal matrix embryonic cellule division

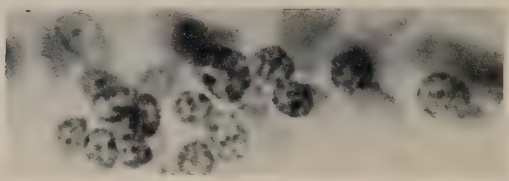
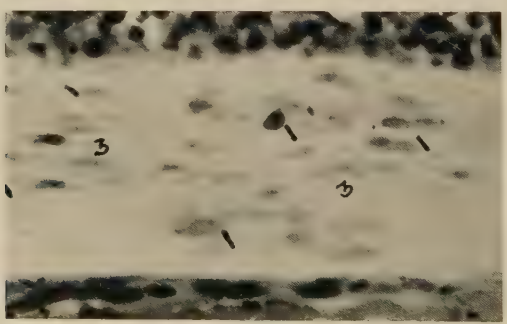


Fig. 25. The multinucleolated nucleus-cellule of the primal syncytium, 2-8th week, human ovum; the matrix embryonic cellule from which the cancer and sarcoma cells are descended.

The large spinal; the medium or transitional; and the small round cells, are here to be seen. The same types occur in the cancer and sarcoma.

Note throughout these normal cell types, they show a more refined, smoother, higher type structural appearance than their coarser cancer and sarcoma descendants; otherwise both the normal and the abnormal (cancer and sarcoma) cellules have the same physical appearance.

Fig. 26. From a 2-3rd week extra uterine villus; showing inwandered syncytial cells into primal blood vessel of this very early villus;

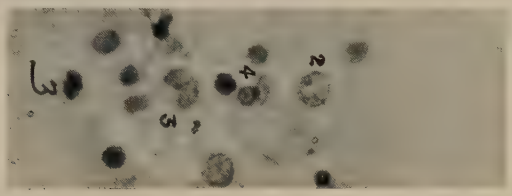


(1) the large round cell; also at (1) the elongated or spindle shaped cell. These types are of common occurrence in cancer.

Fig. 27. Normal cell division at 3-4th week, showing (1) (5) large round cell; (2) (3) elongated, spindle shaped type cell; (7) small round cell cluster form, (3) still clinging together; other

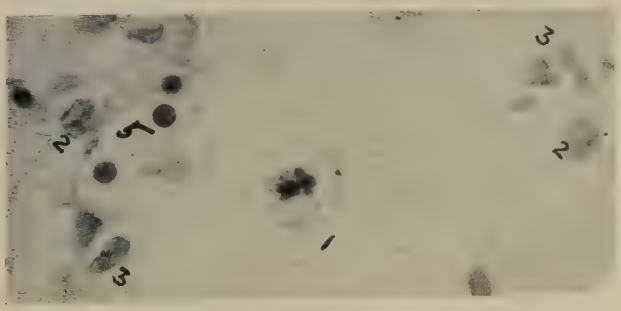
cell divisions not numbered. These types are common in cancer.

Fig. 28. Normal cell division at 3-4th week; (2) medium, tran-



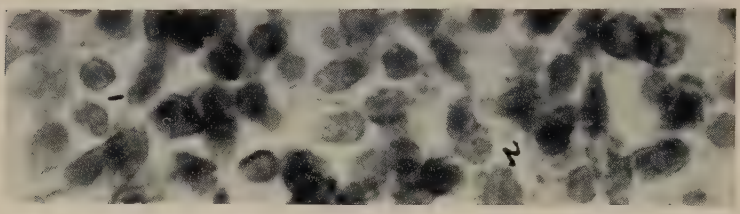
sitional round cell; (3) kidney shaped cluster, two infant round cells still cling together; (4) free infant round cells. Common in cancer.

Fig. 29. Normal cell division at 5-6th week; (1) Karyokinitic figure, mitosis, indirect division; (2) large round cell; (3 below)



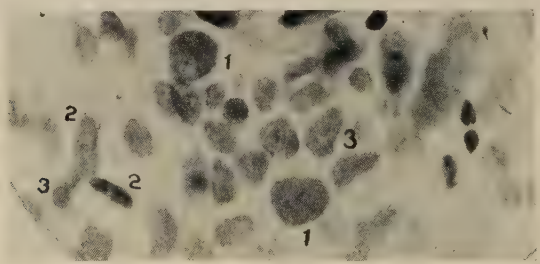
elongated spindle cell; apparently here, amitosis or direct division; both forms seen repeatedly in the normal. Both forms of division common in cancer and sarcoma expression; (3 above) the long narrow band link-chain cluster of clinging infant cellules. In the cancer see Fig. 58 in a glioma; also Fig. 55 in a neuroblastoma.

Fig. 30. The (2) multinucleolated-nucleus-cellule blood corpuscle, the syncytial differentiating blood corpuscle type, at 5-6th week;



(1) the small infant round cell cluster, three small round cells still cling together. Both forms seen in cancer and sarcoma. White blood circulation 5-6th week.

Fig. 31. All types of normal cell division seen in a small area of intervillus bridging tissue at 8th week. All types of cells seen here;

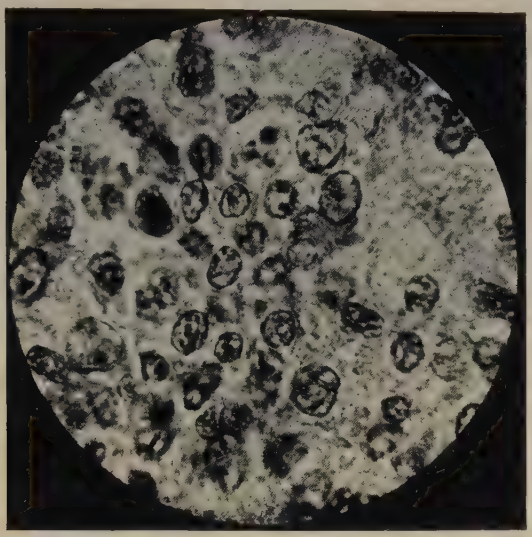


the large, the medium, and the small round cell type; also the spindle. All these types seen in cancer and sarcoma.

Fig. 32. To show the normal binucleated type of division in two cells, here of erythrocytes, surrounded by mature non-nucleated erythrocytes in area vasculosa of human ovum, 8th week. Binucleated cells often seen in cancer expression. See Fig. 52, page 128.

RÉSUMÉ ILLUSTRATIONS OF TYPES OF ABNORMAL CANCER CELLULE DIVISION.

Fig. 33. From a pulmonary metastases of a syncytioma. All forms of cancer cellules are seen here; the large, medium and small round cellule types.



THE CANCER CELLULETTES

Fig. 33. Note the diminutive cancer cellulettes 8 (1). Not many but a few distinctly, though faintly, to be seen in the center of the cancer field; some also in other fields. Small vacuoles in large cancer cells seem origin; follow their circumferences for suggestions of other cellulettes. One medium sized cell, lower left margin of field, shows two cellulettes through its diameter, like a small chain cluster. See Fig. 8 above.

Fig. 34. Large, spinal type round cell cancer.

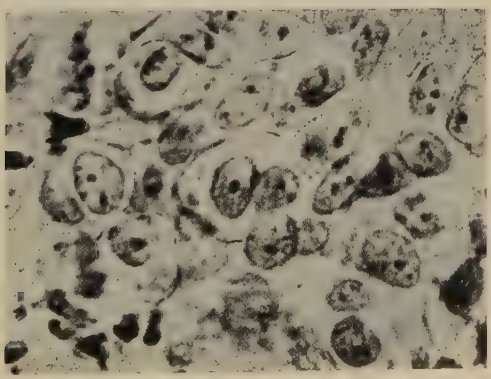


Fig. 35. All types; the large, the spinal; the medium, the transitional; the small round cell type of cancer cell.

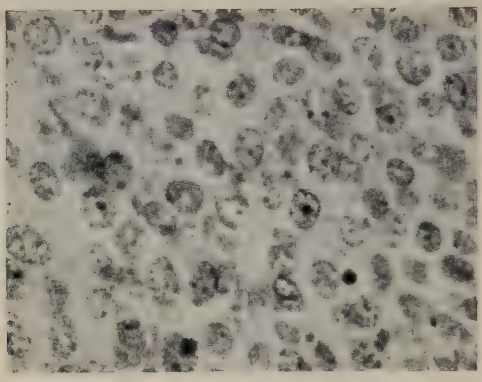
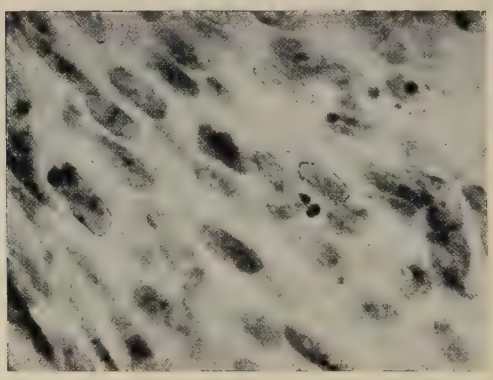


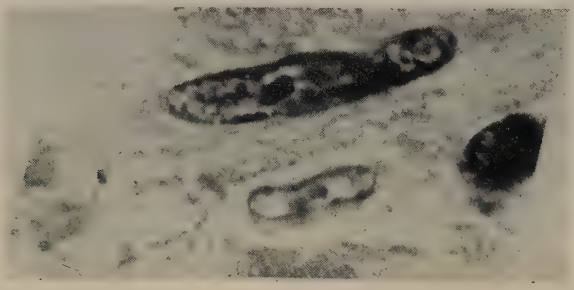
Fig. 36. The spindle cell type of cancer cell. For normal proto-



type see Fig. 20, 2-3rd week; Fig. 6 (2) (3), 3-4th week, human ovum.

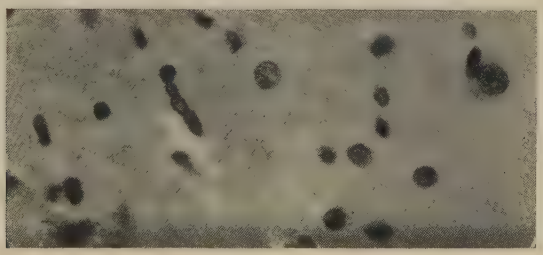
Figs. 34, 35 and 36 from Dr. Karl H. Martzloff, Portland, Ore., Epidermoid uterine cancer, Am. Jour. Obst., and Gyn., Oct., 1928: a clear distinct gem alkaloid résumé of uterine cancer cellule tumor expression.

Fig. 37. Elongated spindle cell, enlarged 2,500 times; infant cellule below. From Dr. Michael Levine, New York, Cytology of



Cancer, Am. Jour. of Cancer, page 144-45, Jan. 1931. For normal prototype see Figs 6 (3) here and 51 (3).

Fig. 38. The long narrow band link-chain cluster of small infant round cellule. From a specimen of glioma. See Fig. 58. As will be



easily recognized, all these types of cancer cellules are seen in the normal prototype divisions shown above, from which the cancer cellules are descended. See Figs. 5-6-7.

Biopsie. Under existing conditions, 1934, a very hazardous procedure; without positive results. Since the non-specific cancer school has no specific cancer cellule or morphological criterion to guide them and measure with as mentor; and since 68% of their specific attempted diagnoses resulted in zero; aside from the great danger of stirring up a general carcinomatous conflagration, biopsie at the present time seems too hazardous for free practice.

Conclusions

Cancer is not epithelial.

Sarcoma is not connective tissue.

Cancer and sarcoma are one.

Today it is easy to remove the autosite cancer, in many cases.

The problem in cancer cure today, is, how neutralize, annihilate the cancer cellulettes, containing the ens malignitatis! This would reach all cases operable or inoperable, and prevent metastases and recurrences. Here serology.

Many forms of sarcoma, so diagnosed, upon restudy are shown to be pure cases of carcinoma.

Origin of cancer is now beyond the stage of theory. Origin of cancer has been traced, shown and demonstrated through illustrations of histologic cytology, as being descended from the primal matrix embryonic cellule of the primal and subsequent syncytium, the Langhan's cellule.

And now, my dear Mynheer, what think you of "the quality of this rather moderate lance"! Rather persistingly illuminative and best of all original in specimen, finding and conclusion. You know, dear sir, I am rather concerned about addressing you again, lest the inevitable may occur that even you might succumb to the seductivenesses of truth and light found in this moderate lance.

However we can be grateful to our spirit of collaboratorial effort; it is all intended for the best, and as advanced and hoping to lead to a nearer cure of an all times' scourge. Now our serologists can center all their efforts on the one cellule cause, the specific cellule of cancer!

May I take the liberty to mention some few offerings, successes of this little moderate lance! as you would term it!

(1) Showing the great via naturae, bridge, linking the life of yesterday, the ovule, with the life of today, the ovum; the Langhan's cellules of the ovum being the direct successors of the corona radiata cellules of the ovule. Here is a lane, if specimen permitted, that could be used to trace back to the Creator! What is new?

(2) Origin of Blood showing it to be in the chorion of the ovum; its syncytial Langhan's Cellules and the absorbed plasm, digested by the syncytium renders it physiologic for the new life, ovum.

(3) Showing the primal blood corpuscles of the primal white blood circulation, are original in the white uncolored multinucleolated Langhan's cellules of the syncytium, continuing so until the 5-6th week. There is an analogous origin of blood and corpuscles in the blood of the chick. Like in the human the erythroblast in the chick is not the commencement of blood origin.

(4) Advancing and clarifying the origin of the white blood circulation in the ovum to the 5-6th week, when it is superseded by the transient primal red blood circulation of the erythroblast.

(5) Blood corpuscle differentiations, not complete, of the blood corpuscles of the blood from the first original white multinucleolated blood corpuscles of the white blood circulation through the bi- and mono-nucleated erythroblast to the mature non-nucleated erythrocyte, the blood corpuscle of maturity.

(6) Proving a most important fact that the fundamental Langhan's cellule, the syncytial cellule, is not destroyed but continues throughout all syncytia and life, pre- and post-natal.

(7) Demonstrating that blood vessels exist in the Amnion, though text book authority states "no blood vessels are known to exist in the amnion; Blood vessels are wanting in the amnion."

(8) Demonstrating that the Langhan's cell is not epithelial in origin or function.

(9) Demonstrating and proving that cancer is not epithelial, sarcoma is not connective tissue.

(10) Proving the Langhan's cellule aberrated is the Specific Cellule of Cancer; a discovery long sought after. Proof by similarity of Langhan's cellule and their cellular divisions, then separation in the stage of proliferation into normal and abnormal (cancer) cellule. In cancer no further cellular differentiation towards normal ultimate cell differentiations.

(11) Proving cancer tissue is not atypical proliferation of epithelium nor sarcoma of connective tissue cell. Cancer tissue is specific proliferation of specific cancer cellules, only.

(12) Cancer is immature always; never from a mature cell.

(13) Modesty, dear Professor, compels me to abstain from mentioning any stellar cases from my clinical general practice work.

(14) How fortunate my illustrations in histologic material in tissue, variety, largeness and clearness of illustration; in minutiae of hitherto unexplainable sources, as of proliferation and conduct of kind and tissue as of human blood at 2-3rd week; 3-4th week, 5-6th week etc. to the erythrocyte. The great importance of the Langhan's cellule, foremost and everywhere to the 7-8th week of development; even the embryo depending wholly upon Langhan's cell syncytial physiology.

(15) Where find superior illustrations of early embryologic histologic features?

(16) Demonstrating primary cellule divisions in the human, from the 2nd week up; primarily almost wholly Direct, a form hitherto quite actively questioned.

(17) Hinted here but to be shown in detail in the next offering: Karyokinesis in the erythroblast in the blood vessels of a 5-6th week villus; a first differentiation in blood cell differentiation from original white uncolored blood corpuscle to the mature erythrocyte through the erythroblast. Until the 5-6th week, cellular division seems wholly Direct, then Karyokinetic. Perhaps in explanation the extra embryo, the immature, is characteristically Direct in division, being more numerous; the Karyokinetic, the mature, embryo appearing later.

As the cablegram says: Stop!

May I hope that you are content. Again thanking you, I remain,

Yours very truly,

DR. FRANK A. STAHL.

Hamilton Club.

Chicago, Illinois
July, 1934.

STEKETEE-VAN HUIS
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